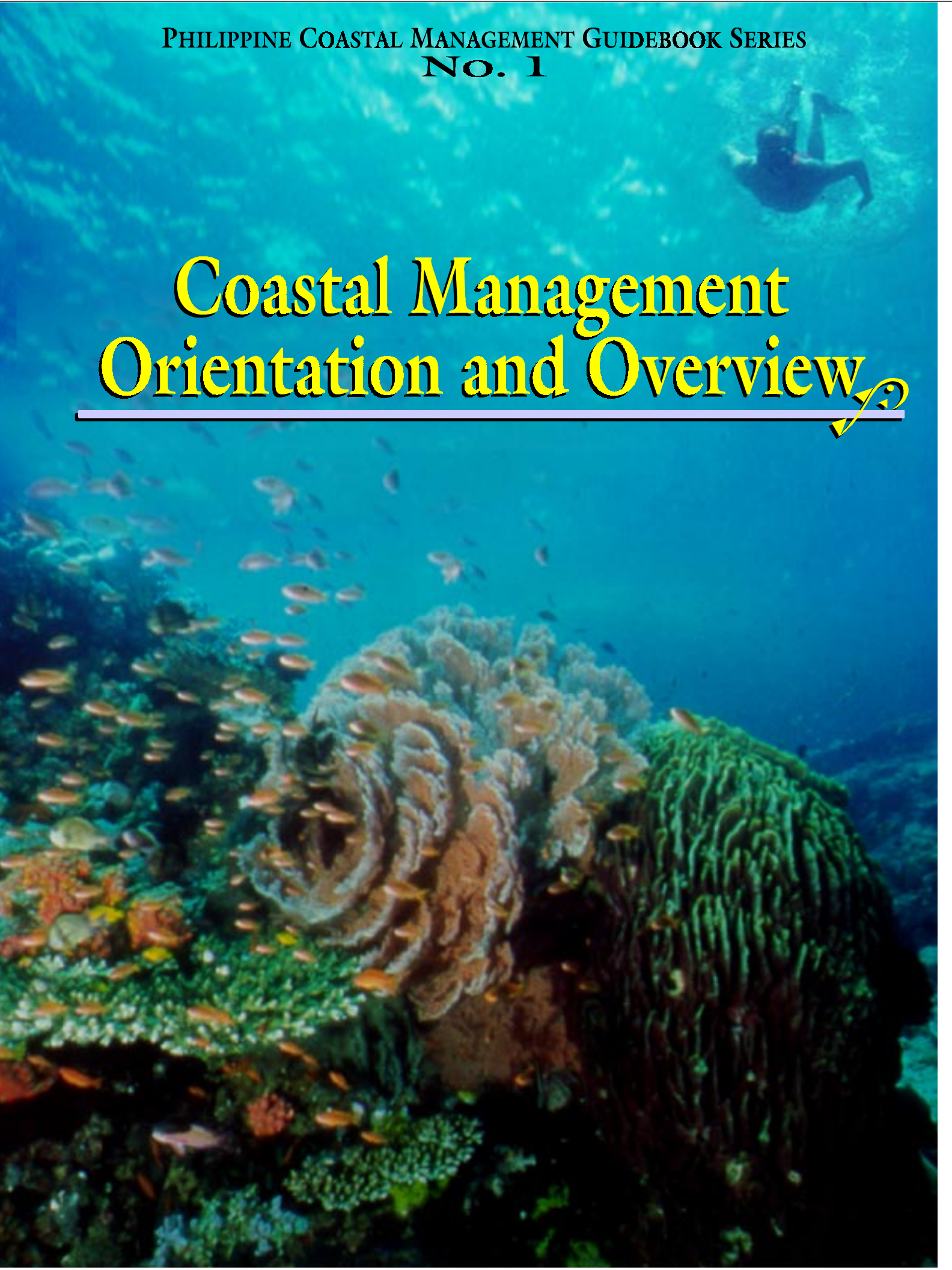


PHILIPPINE COASTAL MANAGEMENT GUIDEBOOK SERIES  
**No. 1**

# Coastal Management Orientation and Overview

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**PHILIPPINE COASTAL MANAGEMENT GUIDEBOOK SERIES**

**No. 1:**

# **COASTAL MANAGEMENT ORIENTATION AND OVERVIEW**

*By:*

**Department of Environment and Natural Resources**

**Bureau of Fisheries and Aquatic Resources**

*of the*

**Department of Agriculture**

**Department of the Interior and Local Government**

*and*

**Coastal Resource Management Project**

*of the*

**Department of Environment and Natural Resources**

*supported by the*

**United States Agency for International Development**

**Philippines**

PHILIPPINE COASTAL MANAGEMENT GUIDEBOOK SERIES  
No. 1

## **Coastal Management Orientation and Overview**

by

Department of Environment and Natural Resources (DENR)  
Bureau of Fisheries and Aquatic Resources of the Department of Agriculture (DA-BFAR)  
Department of the Interior and Local Government (DILG)  
and  
Coastal Resource Management Project (CRMP)

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## *List of acronyms and abbreviations*

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ASEAN	- Association of Southeast Asian Nations
BFAR	- Bureau of Fisheries and Aquatic Resources
BOD	- biological oxygen demand
CEP	- Coastal Environment Program
CRM	- coastal resource management
CRMP	- Coastal Resource Management Project
CVRP	- Central Visayas Regional Project
DA	- Department of Agriculture
DA-BFAR	- Department of Agriculture-Bureau of Fisheries and Aquatic Resources
DENR	- Department of Environment and Natural Resources
DILG	- Department of the Interior and Local Government
DOT	- Department of Tourism
FRMP	- Fisheries Resource Management Project
FSP	- Fisheries Sector Program
ha	- hectare
IEC	- information, education, and communication
ICM	- integrated coastal management
km	- kilometer
km <sup>2</sup>	- square kilometer
LGC	- Local Government Code
LGU	- Local Government Unit
LGCAMP	- Lingayen Gulf Coastal Area Management Program
MCDP	- Marine Conservation and Development Program
MEY	- maximum economic yield
MSY	- maximum sustainable yield
NGA	- national government agency
NGO	- nongovernment organization
OAE	- open access equilibrium
OAY	- open access yield
PO	- people's organization
t	- ton
UNCED	- United Nations Conference on Environment and Development
UNEP	- United Nations Environment Programme
USAID	- United States Agency for International Development

# *Acknowledgments*

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## ***Foreword***

---

Department technical personnel have reviewed and fully endorse the *Philippine Coastal Management Guidebook Series* as an essential information guide to assist in improving the status of Philippine coastal resources and their management. This series of guidebooks strengthens our capacity to enhance coastal management efforts in the country. It clearly identifies roles and responsibilities for all concerned departments, agencies, and organizations in this collaborative coastal environmental management effort.

Let us enjoin all users of these guidebooks to collectively work for sustainable management of our coastal resources for the economic and environmental well-being of our country!



Department of  
Environment and  
Natural Resources



Department of  
Agriculture - Bureau of  
Fisheries and Aquatic  
Resources



Department of the  
Interior and Local  
Government

## ***Preface and orientation to this guidebook series***

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This book is the first in a series of eight guidebooks to coastal management in the Philippines. The titles and basic content of these eight books are shown next page. The series covers major topics concerning all aspects of coastal management in the Philippines and follows a theme of local government perspective, while highlighting the role of the various stakeholders and other factors that affect coastal environments.

This first book, *Coastal Management Orientation and Overview*, presents the overview of coastal management and the rationale for its existence in the Philippines. This book provides the conceptual framework for coastal management drawing on both international and Philippine experience. Emerging trends and successes are summarized to provide guidance in designing coastal management programs. The major issues affecting Philippine coasts and people are explained in an effort to give stimulus and justification to increased support for coastal management programs through all levels of government. The role of the national policy and legal framework, services of the local government, and supporting strategies are described in the fourth chapter. The last chapter shows the benefits of improved coastal management in the country and how these guidebooks can provide essential information to support the process as a basic service of local governments. The coastal management process promoted through these guidebooks is explained and summarized and the 8 guidebooks and other sources of information are linked to different stages in the process.

Coastal management is the theme of these books because of the urgent need to manage and protect the coastal resources of the Philippines. These resources are known to be incredibly valuable and important to the country's security. If the management problems are not addressed soon using integrated approaches, the environmental and food security of the country will be further threatened. These guidebooks lay out a process to address deteriorating coastal environments, loss of resources, increasing poverty, and to reverse current trends. They are holistic in approach while offering many specific solutions that are easy to implement. Read, comprehend, and make use of these guidebooks!

**Philippine Coastal Management Guidebook Series—Titles and contents**

<b>1. Coastal Management Orientation and Overview</b>	<ul style="list-style-type: none"> <li>♦ Definitions and trends in coastal management</li> <li>♦ Issues, resources, and impacts of concern in the Philippines</li> <li>♦ Introduction to the coastal management process in the Philippines</li> <li>♦ Guidebook series and how to use it</li> </ul>
<b>2. Legal and Jurisdictional Framework for Coastal Management</b>	<ul style="list-style-type: none"> <li>♦ All laws pertaining to coastal management</li> <li>♦ All jurisdictions affecting coastal areas and resources</li> <li>♦ The roles and mandates of government agencies</li> </ul>
<b>3. Coastal Resource Management Planning</b>	<ul style="list-style-type: none"> <li>♦ Coastal management planning process from local government perspective</li> <li>♦ Key steps and procedures in the process</li> <li>♦ How to develop the coastal management plan</li> </ul>
<b>4. Involving Communities in Coastal Management</b>	<ul style="list-style-type: none"> <li>♦ Importance of involving coastal communities</li> <li>♦ Community organization process and participatory approaches</li> <li>♦ Information, education, and communication techniques</li> <li>♦ Sustainability of community-based coastal management</li> </ul>
<b>5. Managing Coastal Habitats and Marine Protected Areas</b>	<ul style="list-style-type: none"> <li>♦ The coastal marine ecosystem and how it functions</li> <li>♦ Management considerations of critical coastal habitats</li> <li>♦ Creating and managing marine protected areas</li> </ul>
<b>6. Managing Municipal Fisheries</b>	<ul style="list-style-type: none"> <li>♦ Municipal waters and legal jurisdiction for fisheries management</li> <li>♦ Planning for fisheries management</li> <li>♦ Management interventions and how to apply them</li> </ul>
<b>7. Managing Impacts of Development in the Coastal Zone</b>	<ul style="list-style-type: none"> <li>♦ Roles of planning and environmental impact assessment</li> <li>♦ Environmental guidelines for coastal development</li> <li>♦ Government role and mandate to prevent development impacts</li> <li>♦ Managing coastal and marine pollution</li> </ul>
<b>8. Coastal Law Enforcement</b>	<ul style="list-style-type: none"> <li>♦ Major issues in effective law enforcement in coastal management</li> <li>♦ Roles and responsibilities of major law enforcement groups</li> <li>♦ Initiatives to improve fishery law enforcement</li> </ul>

# chapter 1

## ***Purpose and introduction***

---

With 7,100 islands and 18,000 km of shoreline, the Philippines is a maritime nation, dependent to a major extent on a healthy coastal environment (Figure 1). The coasts have been called the “crossroads of human activity and the sea” (Weber 1993). Indeed, Philippine coastal areas and seas have served as the lifeblood of communities near and far for hundreds if not thousands of years.

Coastal resources provide much of what supports daily life: food, livelihood, economic development, clean water, and even the air we breathe. Healthy coral reefs may support fish harvests of up to 30 t/km<sup>2</sup>/year (Alcala 1981, 1988; White and Savina 1987; Alcala and Russ 1990; Christie and White 1994). Mangrove areas provide a wide range of benefits including clean water, food, medicines, and shoreline protection. These coastal habitats along with seagrass beds support the valuable multi-species fisheries in the Philippines. Despite these important direct and indirect benefits to humans, coastal resources in the Philippines are being severely degraded (White and Cruz-Trinidad 1998).

The coastal zone is legally defined to extend 1 km inland from the shoreline at high tide and to seaward areas covered within the 200-m isobath. Of the areas seaward of the low water mark, the marine waters out to 15 km are under local government jurisdiction, while the national jurisdiction extends from 15 km from the shore up to 200 nautical miles. The extent and importance of coastal resources and coastal areas in the Philippines are highlighted by a few facts:

- ♦ 832 municipalities out of 1,541, or 54 percent, are coastal;
- ♦ Almost all major cities are coastal;
- ♦ 62 percent of the population lives in the coastal zone;
- ♦ There are about 27,000 km<sup>2</sup> of coral reef but less than 5 percent is in excellent condition;
- ♦ 120,000 ha of mangrove remains, only about 25 percent of the area in 1920; and
- ♦ More than 50 percent of the animal protein intake in the Philippines is derived from marine fisheries.

Over the last 20 years, coastal areas in the Philippines have come under increasingly severe threats due to human activities. More than 75 percent of the coral reefs in the Philippines has been degraded from human activity (Figure 2) (Chou *et al.* 1994; Gomez *et al.* 1994). Mangrove forests are declining at a rate of 2,000 ha/year with only 120,000 ha of mangrove forests remaining today from the 160,000 ha 20 years ago and 450,000 at the turn of the century

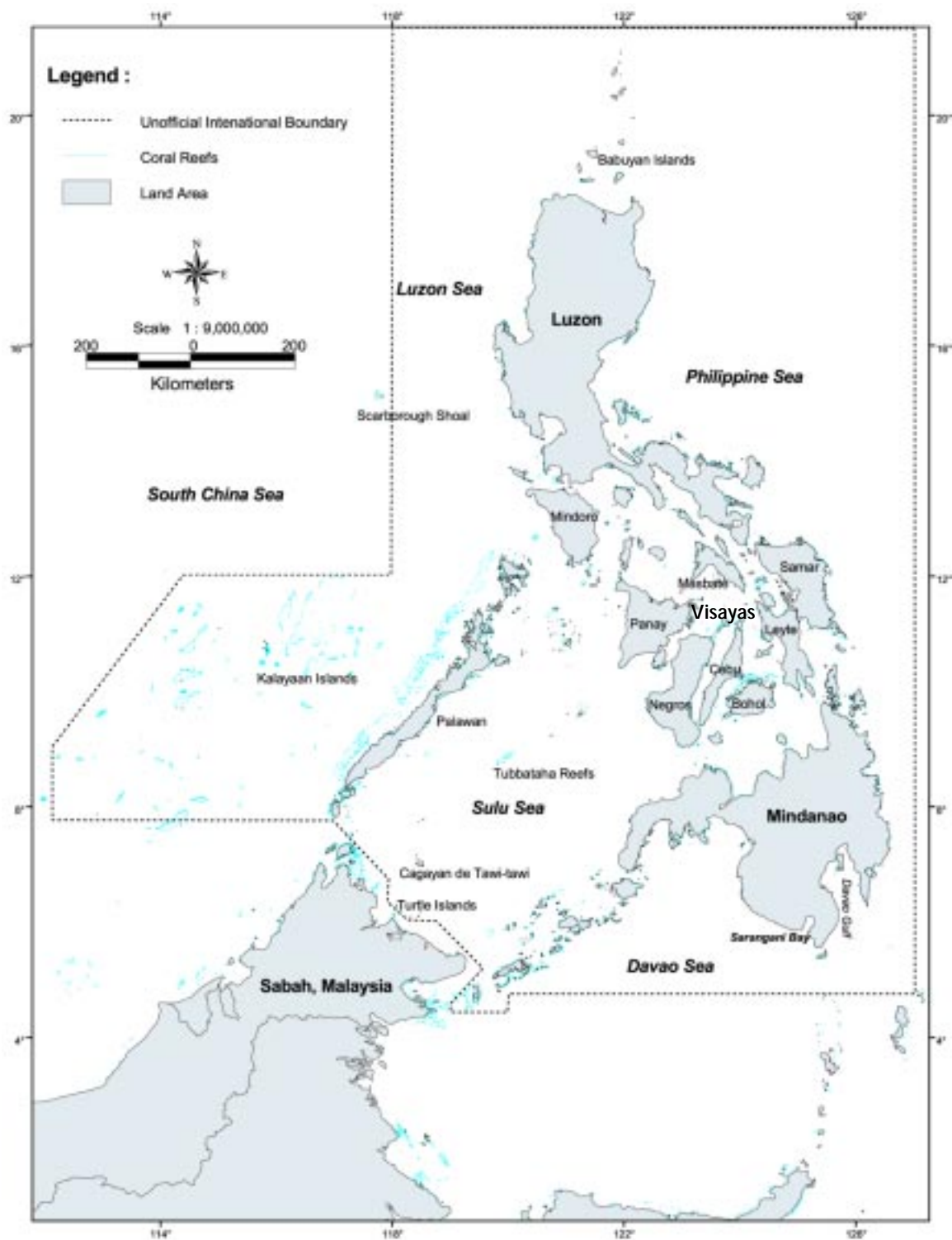


Figure 1. Philippine islands and major locations of coral reefs (WRI 2000).

(DENR 1995; White and de Leon 1996) (Figure 3). Municipal fisheries production has been relatively stagnant for the last 20 years with recent and noticeable declines annually since 1991 (BFAR 1995, 1997) (Figure 4). Coastal ecosystems and their natural ability to produce are being overexploited to the point of causing permanent damage to them. This means that future generations will have fewer resources and the natural productivity of the ecosystems will be

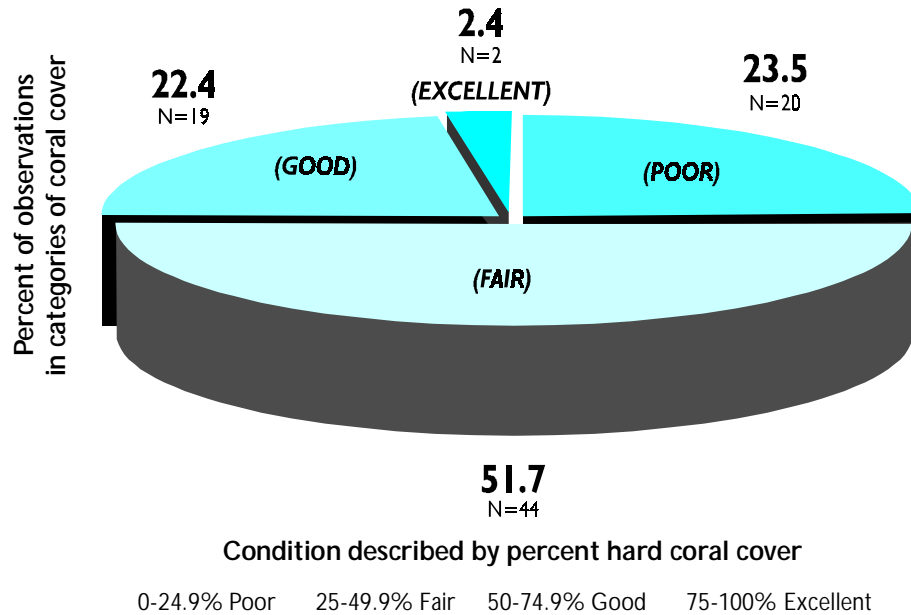


Figure 2. Status of Philippine coral reefs at 14 localities (85 reefs sampled) (1990) (Gomez et al. 1994).

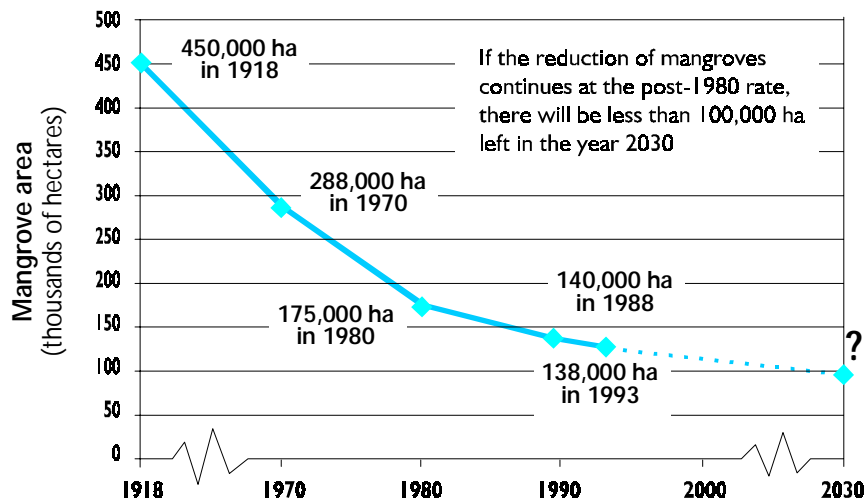


Figure 3. Decline of mangrove resource in the Philippines (DENR 1988, 1995; White and de Leon 1996; White and Cruz-Trinidad 1998).

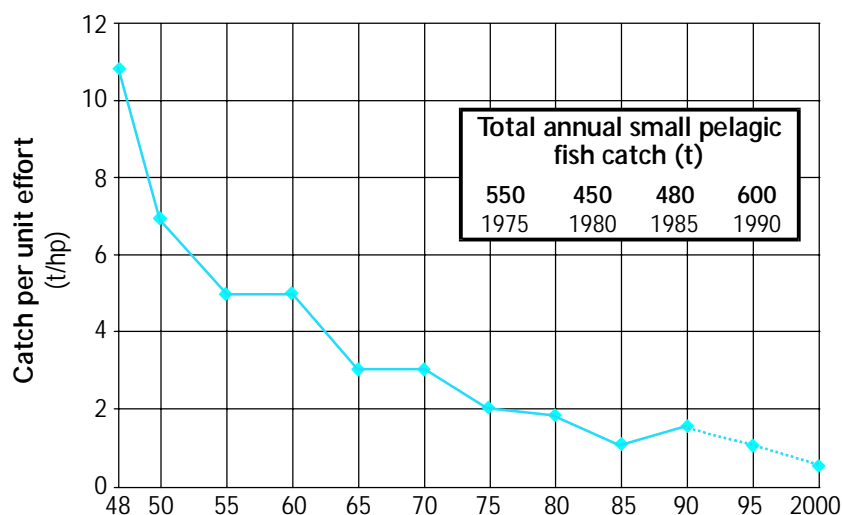


Figure 4. Trend of catch per unit effort since 1948 (Dalzell et al. 1987; Silvestre and Pauly 1989; Dalzell and Corpuz 1990; BFAR 1997).

significantly reduced. To continue overexploiting coastal resources at the current rate is analogous to letting termites eat the foundation of a house. The effects would be tolerable and not noticed initially, but one day the house would collapse! This is also the case for fisheries – one day they will collapse unless we manage them and their coastal habitats effectively.

The coastal situation in the Philippines mirrors global trends where unsustainable use of natural resources, pollution, and habitat destruction are resulting in significant, if not irreversible, loss of the ocean and coastal life support systems. In 1989, the world catch of marine life reached a record high, 89 million tons, which has since declined (Weber 1993; McGinn 1998). Globally, the largest sources of marine pollution come from the land in the form of runoff and air pollution (Weber 1993). The effects of global climate change from burning of fossil fuels are now evident in tropical environments through a slight warming of marine waters. Coral reefs may be the early warning indicators of this global climate change, being very sensitive to small changes in temperature. In 1998, record high sea surface temperature resulted in mass coral bleaching around the world. Repeat events are predicted in the future. Tropical coastal ecosystems may be the most vulnerable to these global trends because of the narrow temperature range to which corals and other organisms are adapted. Finally, the world population reached 6 billion in 1999 with little evidence that the rate of growth will slow down.

Coastal areas in the Philippines are experiencing:

- ♦ Rapid population growth due, in part, to migration to coastal areas. About 60 percent of the Philippine population lives within the 832 coastal municipalities and 25 coastal cities (DENR et al. 1997);

- ♦ Widespread poverty in coastal areas. Fishers, in particular, are among the poorest of the poor;
- ♦ Declining fisheries productivity due to overharvesting and loss of habitats (Courtney *et al.* 1999). Increasing population and poverty have put additional pressure on resources. Fish production has increased by 17 percent in just over a decade, but per capita consumption of fish has declined;
- ♦ Increasing environmental damage. Overfishing, the use of destructive fishing practices, and habitat conversion have resulted in alarming degradation of coastal areas (DENR *et al.* 1997). More than 70 percent of mangroves has been converted for aquaculture, logged, or reclaimed for other uses;
- ♦ Low average production per unit area of fishponds and relatively low economic returns retarding needed investment to improve aquaculture production;
- ♦ Increasing pollution from land-based activities, industrial and urban development, deforestation and agriculture, all of which contribute to declining productivity in the marine environment as water quality is lowered; and
- ♦ Potentially great impacts from global climate change on coral reef ecosystems and the fisheries they support.

The Philippines stands at the threshold of this new millennium with a bleak picture of the status of coastal resources and with much to do to reverse the current trend. In order to sustain and eventually improve the benefits we all derive from coastal resources, significant commitments and investments must be made by coastal communities, local government units (LGUs), national government agencies (NGAs), and assisting organizations to change from the current self-destructive course to one of conservation and sustainable use of coastal resources. Furthermore, these efforts and initiatives must be coordinated and harmonized to achieve the goal of sustaining these benefits for future generations.

Coastal management provides the tools for slowing and hopefully reversing the negative impacts of uncontrolled use of these resources. Coastal management also provides the essential processes for integration of all sectoral, spatial, temporal, policy, and institutional components necessary to achieve the goal of sustainable development (Sorensen 1997). The *Philippine Coastal Management Guidebook Series* was developed to increase the understanding and application of these processes and tools by all sectors of society including:

- ♦ LGUs to deliver coastal management as a basic service;
- ♦ NGAs to assist and train local government and other sectors in coastal management;
- ♦ Nongovernment organizations (NGOs) and other assisting organizations to facilitate and foster coastal management initiatives in coastal communities and LGUs; and
- ♦ Private sector and other stakeholders to exercise their participation and contribution to coastal management.



This first guidebook summarizes the varied issues that can be addressed by coastal management and provides an overview of coastal management concepts, principles, processes, and trends and an orientation to the *Philippine Coastal Management Guidebook Series*.

An important theme in this book and the others of this series is that we must look at the larger picture of what forces are affecting our coastal environment before we can progress in managing people and resources for sustainable uses. Equally important, sustainable development and use of natural resources can be very elusive if we do not fully understand the natural limits of the resource systems.

The following chapter highlights the primary coastal management issues of concern in the Philippines and their causes. It also provides some economic values of what the resources are worth and what we lose as they are destroyed. This information is essential in designing coastal management programs and, more importantly, convincing policy-makers and resource users of the need to invest financially in the management of coastal resources.



ALAN WHITE

*Management of coastal resources is crucial to ensure the continuation of benefits such as food supply, livelihood, revenue, and quality of environment.*



LYNN FUNKHOUSER

*The Philippines is blessed with highly diverse and productive seas; however, the values associated with coastal resources are being lost with increasing habitat destruction, pollution, and overfishing.*

# chapter 2

## *Issues addressed by coastal management*

---

Coastal management is first and foremost about addressing varied and often interconnected issues that directly or indirectly impact coastal areas. Coastal management programs must identify, prioritize, and address a wide range of issues from deforestation to dynamite fishing (Figure 5). The diversity of issues in coastal areas can seem overwhelming; however, a detailed and thorough understanding of the issues enables sound decision-making. Detailed reviews and analyses of these issues and problems are presented throughout the *Philippine Coastal Management Guidebook Series*. This chapter provides selected examples of issues addressed by coastal management.

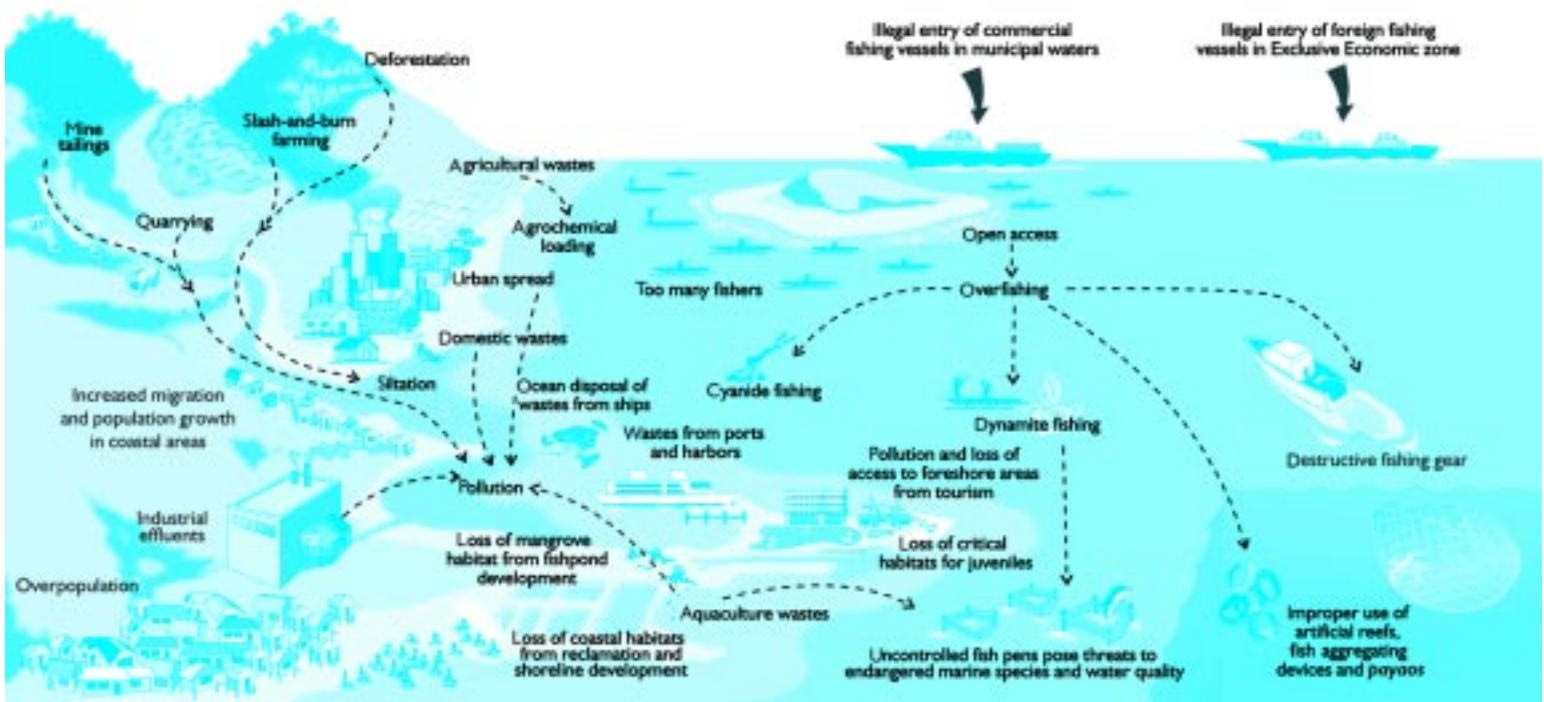


Figure 5. Various economic activities and their impacts on the coastal environment.

The Philippine archipelago is endowed with ecologically diverse and economically important coastal resources such as coral reefs, mangroves, estuarine areas, beaches, and a variety of fisheries. Managed properly, these resources can continue to benefit the Philippine economy and the well-being of many coastal residents (White and Cruz-Trinidad 1998). Unfortunately, many serious problems exist in Philippine coastal areas that are causing the natural productivity of these areas to be compromised and degraded.

## RESOURCE USE CONFLICTS

Natural resources are those products made by nature from which humans derive value. Forests, fisheries, minerals, water, and land resources are valuable commodities in the Philippines. Resource use conflicts arise when the benefits derived by one group of people using one resource impact the benefits derived by another group using the same or another resource. Similarly, overuse of one resource may affect the relative health or abundance of another resource within an environmental system. Such impacts are not always obvious and must be understood.

Examples of resource conflicts that can be addressed by coastal management include:

- ♦ Siltation from deforestation by resource users in upland areas negatively impacts coral reef habitats and fisheries in coastal areas;
- ♦ Intrusion of commercial fishing in municipal waters results in overexploitation of limited fisheries resources where relatively few individuals benefit; and
- ♦ A lack of specific regulations (local and national) for fishing activities within known productive fishing grounds where small-scale fishers are directly dependent for livelihood.

Coastal areas all over the Philippines are being developed rapidly because people like to live and do business near the sea. The consequence is that beaches, foreshore land areas, and nearshore coastal habitats are in demand and are being utilized for a wide variety of conflicting human uses including industry, construction, dumping, boat landings, tourism, and habitation.

Legally, much of the area within 15 km in distance from the shoreline has been reserved for the use of municipal fishers, by virtue of the Local Government Code. In addition, the Fisheries Code of 1998 reserves up to 10 km of municipal waters for the exclusive use of municipal fishers. Nevertheless, many use conflicts between municipal and commercial fishers still persist within the 10- and 15-km limits.

While commercial fishing is strictly prohibited within municipal waters by national laws, intrusion of large, highly efficient, commercial fishing vessels is prevalent. One result of the conflict between the commercial and municipal sectors is decreasing catches. As indicated, catch from the municipal sector is being overtaken by catch from the commercial and aquaculture sectors; meanwhile, municipal fishers are growing in number. The willingness of fishers to continue fishing when catches are declining indicates the relative lack of alternatives and the small value fishers place on their own time (Añonuevo 1989; Trinidad *et al.* 1993). If properly implemented, reserving the use of municipal waters by municipal ordinances that are enforced serves as a strategy for restricting access, reducing fishing pressure, and improving the condition of municipal fisheries for more fishers for a longer time. Local management regimes that clarify and limit user rights will improve sustainability of fisheries.

An increasingly common situation is the displacement of fishing communities for land reclamation projects. These projects are removing large areas of coastal habitat, such as seagrass beds and mangrove forests, thus permanently eliminating nursery grounds for municipal fisheries without mitigation measures.

## POPULATION GROWTH AND POVERTY

Population growth in coastal areas exacerbates resource use conflicts in many ways. The coastal areas are under increasing pressure from rapid population growth of 2.4 percent per year and the consequent concentration of development activities in the coastal strip (Figure 6). More than 60 percent of the Philippine population lives within what are considered coastal areas because all major cities are coastal and most large industries are located close to the sea. In addition, the most productive natural ecosystems in the country occur on the coast and attract and support many people. The 832 coastal municipalities and 25 coastal cities in the country are facing increasing environmental degradation from pollution, reclamation and conversion of fragile habitats, and overuse of natural resources.

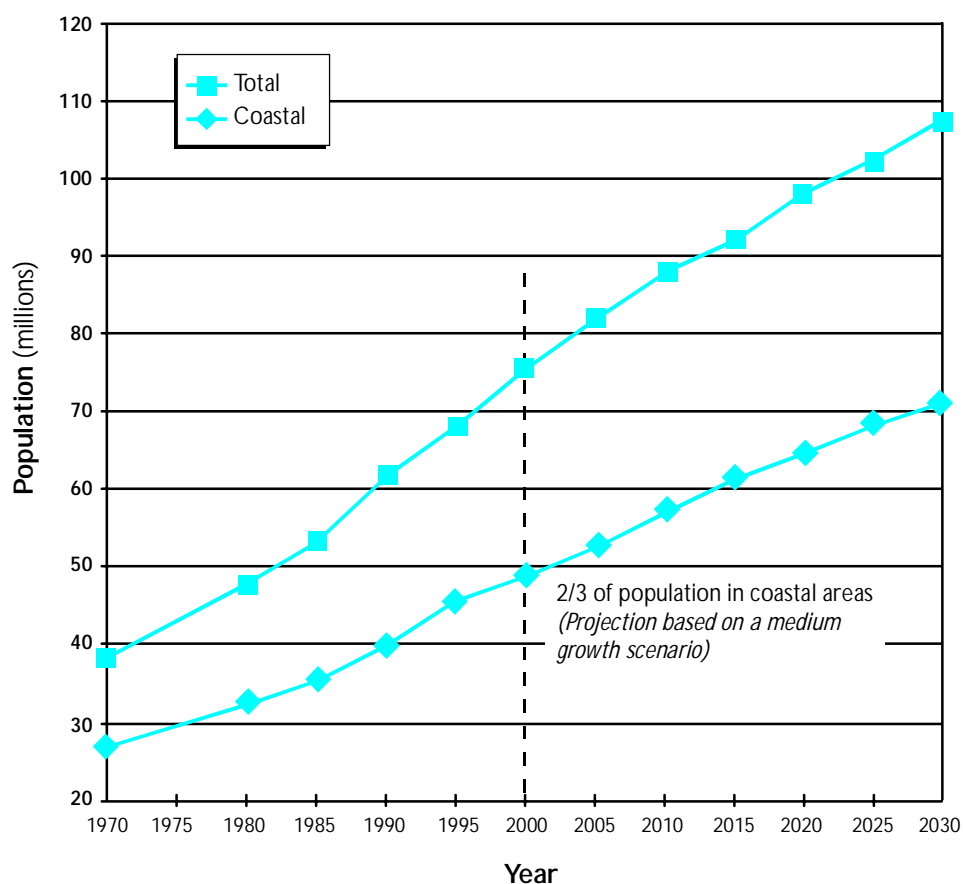


Figure 6. Population growth in the Philippines (NSO 1992).

The most significant challenge is to limit population growth so that gains from development and environmental management are not eroded or reversed by the increasing pressure of too many people. The present experience is that as the population density increases, the quality of life and the environment declines for the average person living in a coastal area.

### ILLEGAL ACTIVITIES

The destruction of coastal habitats and decline of fisheries are due to a large extent to the proliferation of illegal activities. While national policies and laws exist prohibiting a wide range of activities in coastal areas, without swift, painful, and public enforcement of these laws, illegal activities abound.

Examples of illegal and damaging activities that can be addressed by coastal management include:

- ♦ Use of destructive and illegal fishing methods such as blast fishing, poisons, superlights, *muro-ami*, and others;
- ♦ Intrusion of commercial fishing into municipal waters;
- ♦ Lack of observance of shoreline setback regulations resulting in damaging construction activities and development in the coastal zone;
- ♦ Conversion of mangrove and seagrass habitats to land or other uses resulting in decline of nearshore catch;
- ♦ Harvesting of banned species including corals, whale sharks, manta rays, giant clams, and endangered marine species; and
- ♦ Habitat destruction from other causes.

Respect for and obedience of the law needs to be promoted and become accepted as an important means to improve the status and productivity of coastal ecosystems. Fisheries will improve significantly if illegal fishing is stopped! Public education and better enforcement are two strategies that have proven to be effective.

Although it is not common knowledge, the foreshore areas from mean high tide to 40 m inland are protected by law and reserved as open access space where no building or private ownership is allowed. This law is not being enforced, but it should be in the near future to prevent overcrowding and environmental degradation in foreshore areas. In fact, private control over beach and foreshore areas has increased to the point that oceanfront and beach access is limited within or near most urban centers. It is ironic that there are virtually no public beaches in Cebu City, the city known for its beaches! Other impacts of development activities on the coastal zone are shown in Table 1.

**Table 1. Impacts of development activities on the coastal zone.****Aquaculture development**

The primary impacts of concern in the Philippines related to aquaculture development are the conversion of coastal ecosystems, primarily mangrove, to fish or shrimp ponds. This activity alone has replaced more than 60 percent of the original mangrove forest in the country. Another significant impact results from various kinds of pollution generated by aquaculture because it is essentially a farming system that uses fertilizer, feeds, and chemicals. In concentrated form, they are detrimental to nearshore water quality, natural fisheries, and human health (Pullin *et al.* 1993).

**Foreshore land use and development**

Coastal areas all over the Philippines are being developed rapidly since people like to live and do business near the sea. The consequence is that beaches and foreshore land areas are in demand and are being utilized for industry, construction, dumping, boat landings, recreation, habitation, and many other uses.

Inadequately regulated foreshore development has resulted in several issues:

- ♦ Inadequate development setbacks from the water line. Adequate setbacks are essential to create an open space for access, to minimize negative impacts on the nearshore marine systems such as reefs and seagrass beds, to minimize erosion caused by structures on the beach, to better control what is dumped into the sea, and to create a visually attractive area, uncluttered with haphazard development, as a transition area to the sea (Sullivan *et al.* 1995);
- ♦ Increased pollution in nearshore waters that often emanates from shoreline areas where there is a lack of control on activities. Domestic waste generated in shoreline communities all goes to the sea. Septic systems constructed too close to the beach drain to the sea and pollute the nearshore areas, especially in densely populated areas. Dumping of solid waste in nearshore areas is a related problem. Construction activities near the beach and sea often cause silt to wash into marine waters and smother reefs and seagrasses or affect nearshore fisheries;
- ♦ Erosion of beach sand, usually resulting from the construction of structures on or near the beach. Although sandy beaches will normally replenish themselves after a storm, once a beach wall or perpendicular jetty is in place, the natural movement and return of the sand is prevented (Maragos *et al.* 1983). Thus there is a need to control all construction in the foreshore areas. Examples of this problem can easily be seen along developed shorelines such as on Mactan Island or in Lingayen Gulf, where natural beaches have disappeared; and
- ♦ Squatting and illegal structures in the foreshore areas. Such settlements are difficult to eradicate because the squatters are usually aware that their presence is illegal so they try to minimize opportunities for arrest and are adept at making excuses about why they are there. Squatters in particular have the excuse that they are poor, landless people with few alternatives. Unfortunately, the continued prevalence of squatting only encourages more people to do the same, mostly to the detriment of foreshore and beach areas and any hope of environmental integrity.

**Coastal habitat conversion and land filling**

The competition for space in coastal areas is encouraging more projects designed to create new, usable land by converting coastal habitats such as estuaries, shallow reef flats, beaches, and mangroves to other uses through land filling. Several large and well-known reclamation areas in the Philippines are located in the urban centers of Manila and Cebu. The economic justification for these is strong given the tremendous need for quality land for urban expansion and renewal. However, these land reclamation efforts should be viewed as exceptions. There is often little justification to fill a coastal habitat because reefs, mangroves, and seagrasses are naturally valuable and their existence is finite. For every square

(continued)

*Table 1. (continued)*

meter of seagrass bed destroyed, we lose a lifetime of natural production of invertebrates and fish that feed many people and support their livelihood (Fortes 1989). Whenever an area is lost to human encroachment, it will never return and can never be recreated somewhere else. In short, the implications of habitat conversion and land filling are:

- ♦ Total and permanent loss of the natural habitats and their ecological and economic functions;
- ♦ Permanent decreases in localized fish catch and traditional livelihood opportunities for society's most economically vulnerable;
- ♦ Significant pollution in the form of sediments that can spread for many square kilometers and last for years after the construction is completed;
- ♦ The potential for increased risk of sinking and flooding; and
- ♦ The potential for disrupted drainage patterns that will change the natural mixing of fresh water and sea water and thus affect marine organisms not tolerant of fresh water.

### **Mining and quarrying**

Mining and quarrying in coastal areas of the Philippines are subject to environmental impact assessment in all cases. Nevertheless, these activities continue illegally, without proper assessments, in many areas as small-scale and sometimes large operations. Upland mining is regulated but can have well-known impacts in coastal areas such as the mine tailing spill in Marinduque Island that smothered several square kilometers of seagrass beds and polluted the waters along kilometers of coastline. Coastal mining, which is the primary concern here, has impacts that are not always obvious but can significantly change shoreline dynamics and beaches if not properly regulated. The mining activities and their most important impacts are:

- ♦ Sand mining from beaches causes beach erosion and eventual disappearance of the beach. All white-sand beaches in the Philippines are generated from the natural erosion of reef corals and shells which, when deposited on a beach, are ground into sand. The rate of beach formation is slow; mining of beach sand removes a finite resource that takes hundreds to thousands of years to rebuild through natural processes;
- ♦ Sand mining from submerged reef or sandy areas stirs up silt in the water column and changes water-flow patterns. Also, the sand removed from a submerged area can easily be part of a yearly wave and current cycle that places the sand on the beach for part of the year and under the water for another part of the year. The obvious result of sand mining is that the beach will not return during the next cycle; and
- ♦ Mining for any material in a foreshore area always causes some polluting silt and runoff material that smother nearshore habitats.

### **Tourism development**

Tourism-related activities in the coastal zone are increasingly common in the Philippines. The coastal areas and all their resources are one of the primary attractions for tourists. Most people come for a beach, swimming or scuba-diving holiday or some variation of this theme. Consequently, the amount of economic development supported by tourism, including resorts, shorefront developments, roads, boating, and diving, has escalated in recent years. The lack of planning in much of the tourism sector is a major issue and is causing many problems. Although it is in the interest of tourism developers to maintain the environmental quality most tourists come to enjoy, the opposite is occurring in many instances. Good intentions in the tourism sector are not an adequate replacement for good planning and the anticipation of irreversible environmental impacts.

*(continued)*

*Table 1. (continued)*

The most common impacts from tourism development and activities that cause them are shown in Figure 7. These activities are not much different from those discussed above in sections on pollution, foreshore development, mining, and others that involve construction in beach and shoreline areas. The unique impact of tourism is more related to certain forms of recreation that cause both biophysical damage to the environment and social disruption within the communities where tourism flourishes. The recent introduction of motorized recreation vehicles, such as jet skis and speedboats, has added new dimensions to the need for regulation in shore areas. The age-old problems of social corruption and prostitution associated with tourism can only change with better education and planning, and most of all, marketing tourism for the country in a manner that attracts "eco-friendly" tourists.

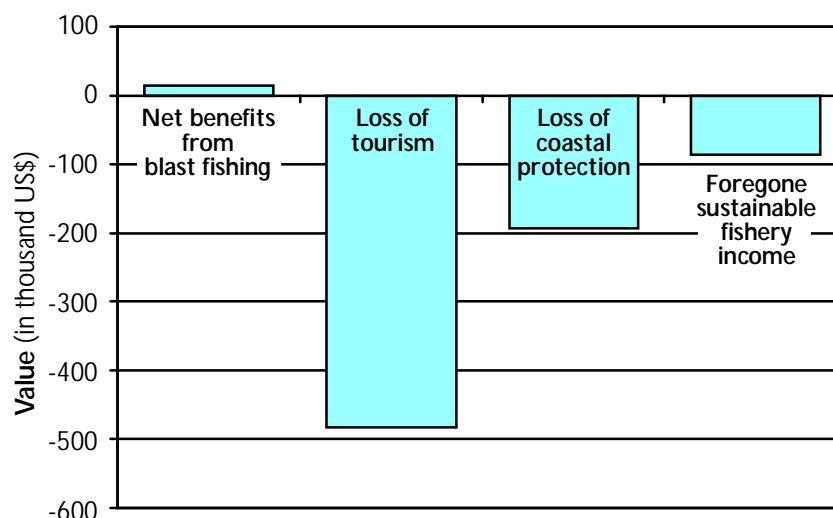


*Figure 7. Impacts of tourism activities on the coastal zone.*

Illegal fishing methods, such as cyanide and blast fishing that are known to destroy or shatter the physical structure of the coral reef, create considerable losses to society (Figure 8). Here, the net private benefits from blast fishing are only about US\$15,000 (net present value over 25 years for 1 km<sup>2</sup> of reef). In contrast, the net present value of losses to society in terms of foregone coastal protection (US\$193,000), fisheries (US\$86,300), and tourism (US\$482,000) is many times higher than the gain to the blast fisher(s) (Cesar 1996).

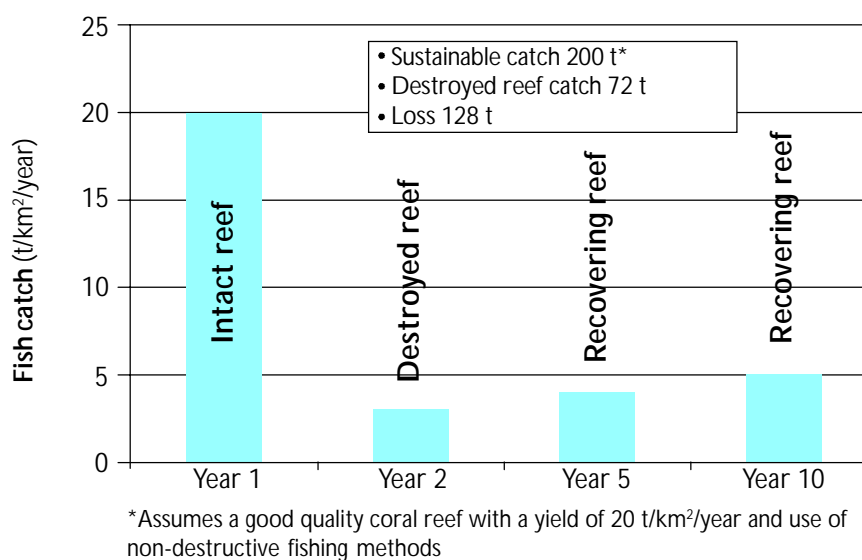
The impacts of illegal and destructive fishing practices on the environment are long term and irreversible, with continuing reductions in net returns for all types of fishing methods. The loss in





**Figure 8.** Net present value of blast fishing to individuals and associated losses to society per km<sup>2</sup> of reef (in thousand US\$, over 25 years, 10 percent discount rate) (Cesar 1996).

potential fish catch alone from a destroyed coral reef is shown in Figure 9. Enforcing prohibitions against dynamite and cyanide fishing and other illegal activities is an important part of the overall management challenge. While improved enforcement is critical, coastal management tools and processes must also be applied to reduce conflicts among fishers and other coastal stakeholders, restrict unsustainable fishing practices, and provide greater protection to habitats.



**Figure 9.** Fish yield decline and loss on a destroyed and recovering coral reef over 10 years (Alcala and Gomez 1979; White 1987; White and Cruz-Trinidad 1998).

## POLLUTION

The significant role of the coastal environment in absorbing and diluting pollutants from human activities largely goes unnoticed. The efficient and absorptive capacity of seawater buffers and hides the impacts of large perturbations from pollutants. The transport role of water is crucial in the maintenance of coastal ecosystems because all marine ecosystems are dependent on the incubation and movement of larvae that provide new recruits of fish and invertebrates to coral reefs, seagrass beds, and the larger marine fisheries we use. At the same time, pollution of all kinds is carried by water and affects all living coastal resources and their ability to grow and reproduce naturally. As the sea becomes more polluted, we lose living coastal resources at an increasing cost to society (Hodgson and Dixon 1988; 1992).

There are numerous types of pollution common in Philippine coastal waters, but a few sources are pervasive and are causing increasing harm to coastal ecosystems and fisheries production.

Types of pollution that can be addressed by coastal management include:

- ♦ Domestic sewage from coastal cities, municipalities, and ships, most of which is dumped directly and untreated into the sea;
- ♦ Domestic solid waste from cities, municipalities, and ships, most of which is dumped into rivers, canals, shoreline areas, and then moves to the sea;
- ♦ Mine tailings and sediments from quarrying and mining in coastal and upland areas, much of which flows to the sea through streams and rivers;
- ♦ Industrial organic and toxic waste which, although often treated or restricted, is frequently dumped into rivers and the sea;
- ♦ Agricultural chemicals that pollute nearby rivers, streams, and groundwater, some of which end up in coastal waters; and
- ♦ Oil and fuel leaks and spills from ships.

The overall impact of pollution on coastal areas and marine waters and ecosystems is degradation of the ecosystem, lower environmental quality, and most significantly, lower natural production. Pollution prevention, treatment, and disposal measures must be implemented to maintain the life support system provided by coastal ecosystems. The public must be educated to the fact that dilution is not the solution to pollution.

## FOOD SECURITY

The Philippines is facing the beginning of a crisis in the security of food from aquatic resources. Overfishing, coastal habitat destruction, and illegal fishing are primary contributors to the decrease in the available food-dependent fisheries (Courtney *et al.* 1999). The goal of coastal management is to manage all of our coastal resources in a sustainable manner while allowing the greatest benefit to accrue to the largest number of people for the longest possible time.

Key issues affecting food security that can be addressed by coastal management include:

- ♦ Continued increases in commercial and municipal fishing effort resulting from population growth and migration to coastal areas;
- ♦ Slow economic development in coastal areas providing few alternatives to municipal fishers;
- ♦ Use of habitat and fishery-destructive fishing practices;
- ♦ Illegal commercial fishing in municipal waters;
- ♦ Open access to fishery resources;
- ♦ Unsustainable economic development;
- ♦ Degradation of coastal habitats; and
- ♦ Weak implementation of coastal management programs at local and national levels.

Fisheries of all kinds in the Philippines are near or have surpassed sustainable levels of catch (Israel and Banzon 1996). Most studies show that important fisheries are overfished and that the real return in terms of volume of catch and economic value is declining (Pauly and Chua 1988; Pauly 1990; Russ 1996). In some cases where volume has increased, the catch composition has changed to a lower value of catch because of changes in the ecological composition of the fishery. A particular issue is the continuous voluminous fishing of juveniles and spawners of commercial value species that is threatening some important species. The causes are complex, but the result is that fishing effort is greater than the resource can support and many habitats are degraded. The impact from this overfishing is initially subtle, but the end result is fewer fish and lower reproductive capacity of remaining fish (Figure 10).

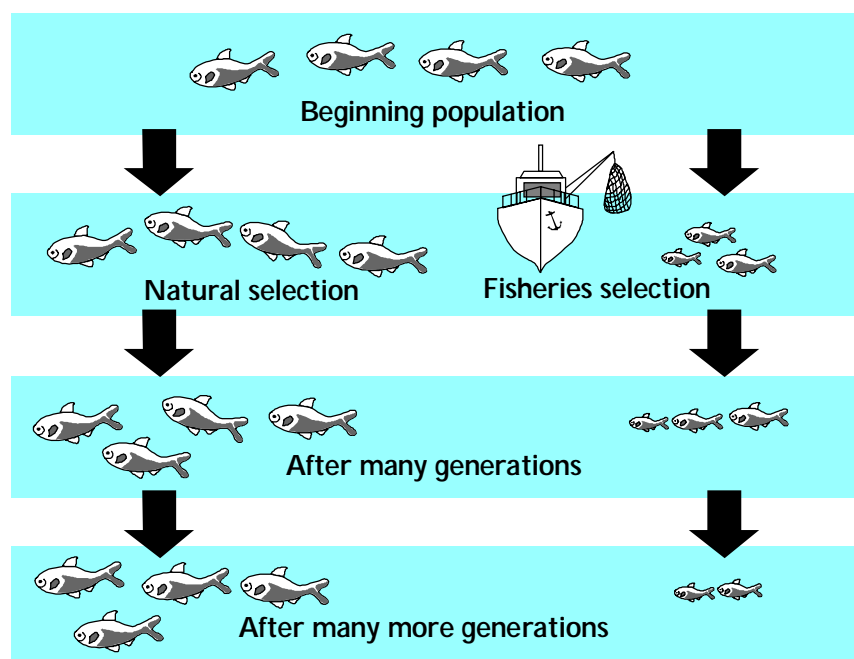


Figure 10. Long-term impacts of overfishing (Bohnsack 1994).

Fisheries production in 1996 totaled 2.8 million t (Table 2; Figure 11). This production is divided almost equally between the municipal, commercial and aquaculture sectors. Aquaculture production has almost doubled in the last ten years. In contrast, the municipal sector shows a steady downward trend. Its contribution to total production decreased from 57 percent in the early 1970s to just 30 percent in 1996. In general, production growth has been minimal over the last 5 years, averaging 1.5 percent per year.

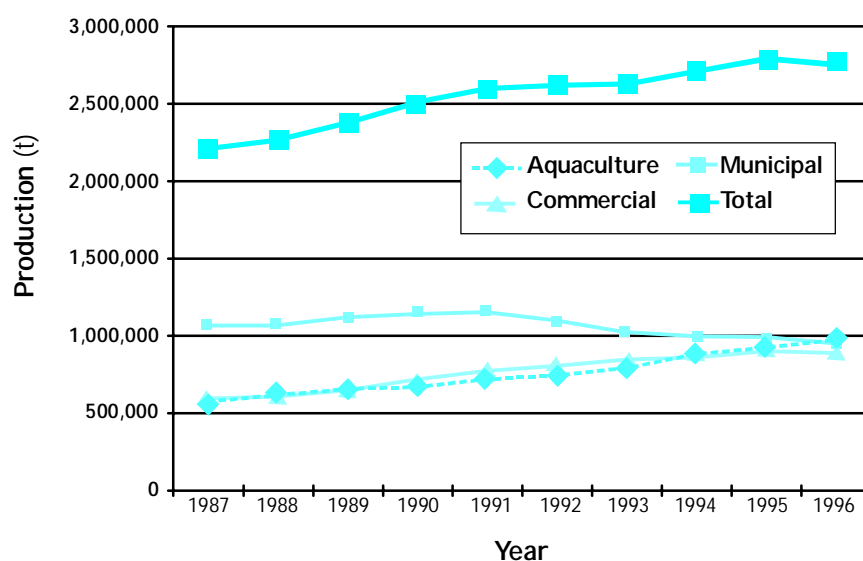
There are clear signs that Philippine open-water fisheries have reached their practical limits and, as noted, municipal fisheries are declining (Pauly 1990). One primary reason why these nearshore and small-scale fisheries are declining is that they are habitat dependent. And, as shown above, the viable and healthy coral reef and mangrove ecosystem areas have decreased significantly over this century (McManus *et al.* 1992). The result is a decrease in fish catch and a drastic decrease in catch per unit effort (see Figures 11 and 12).

*Table 2. Philippine fish production by sector, 1996.*

Sector	Quantity (in 1,000 t)	Percent	Value (in billions of pesos)	Percent
1. Aquaculture*	981	35.4	33.2	40.0
2. Municipal fisheries	909	32.9	25.4	30.5
3. Commercial fisheries	879	31.7	24.5	29.5
<b>Total</b>	<b>2,769</b>	<b>100.0</b>	<b>83.1</b>	<b>100.0</b>

*\*About 60 percent of aquaculture production is actually seaweeds farmed for industrial processing and export.*

Source: BFAR (1997).



*Figure 11. Trends in Philippine fish production, 1987-1996 (BFAR 1997).*

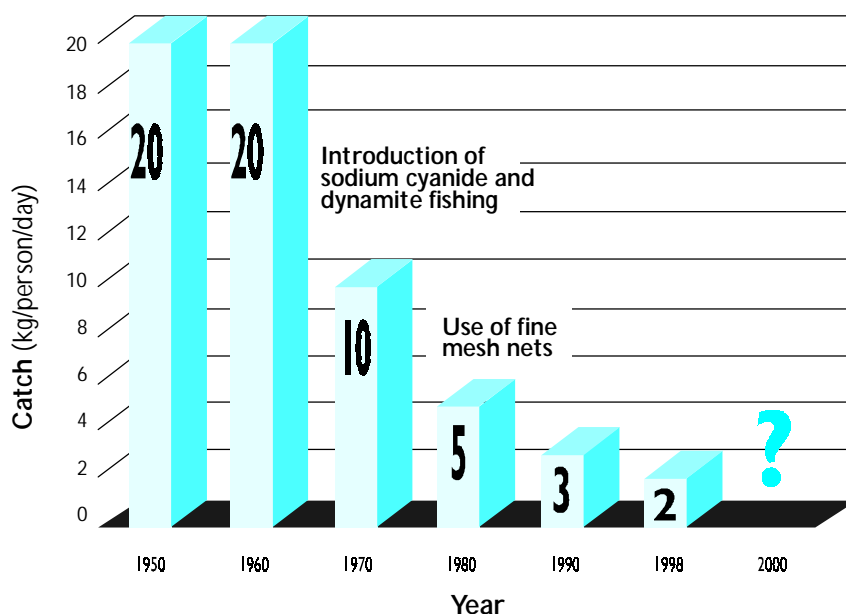


Figure 12. Trend of catch per unit effort for one barangay, Olango Island, Cebu, Philippines (White and Cruz-Trinidad 1998).

As the primary mandate for managing municipal waters lies with the local government, municipalities, cities, and provinces must serve as action centers for results. LGUs and their coastal communities must serve as stewards of coastal resources to sustain food production and economic benefits. Local governments are in a strong position to implement a variety of coastal management “best practices” described in this series of books to improve the benefits derived to local communities from their coastal areas. NGAs have a major role in supporting local governments to fulfill their mandate in managing coastal resources.

## BIODIVERSITY CONSERVATION

With 430 species of corals, more than 2,000 species of fishes, 14 species of seagrasses, hundreds of seaweed species, and literally thousands of species of different types of marine invertebrates, the Philippines parallels Indonesia with the richest tropical marine biodiversity in the world. This wealth of biodiversity is one of the factors masking the serious impacts of overfishing. For instance, in temperate marine ecosystems where diversity is relatively lower, the loss of one species anywhere in the food chain can result in the collapse of the whole system. In tropical marine ecosystems with diverse and complex food webs, the loss of one species may go initially unnoticed by humans; however, with the loss of many species and essential habitat, eventually the integrity of the ecosystem will decline and ultimately collapse.

A few signs of major ecosystem changes reflected in Philippine fisheries are that (Johannes and Riepen 1995; Barber and Pratt 1997):

- ♦ Squid and cuttlefish abundance has increased as a result of reduced predation and changes in the ecosystem and composition of the fish species present;
- ♦ Trevallies and sting rays have become very scarce due to overfishing so that reproduction is failing and new recruits are less abundant;
- ♦ Groupers and snappers are much less abundant than 20 years ago due to overfishing that eliminates adult spawning fish;
- ♦ Low-value or “trash” fish make up a larger portion of the fish catch because of ecosystem changes;
- ♦ Top predators (sharks, barracuda, tuna) are almost extinct in many areas;
- ♦ Ornamental and precious shells are missing from shallow water habitats;
- ♦ Local extinction of dugongs, sea turtles, whale sharks, and other large marine animals as a result of overexploitation, by-catch, and habitat destruction; and
- ♦ Local extinction of ornamental corals, shells, sea horses, aquarium fish, and live food fish in response to unsustainable international trade demands.

Key biodiversity issues addressed by coastal management include:

- ♦ Use of cyanide to collect aquarium fish and live food fish has proliferated destroying habitats in addition to overfishing of valuable species (Barber and Pratt 1997);
- ♦ Poor management of all critical habitats that support much of the marine biodiversity in shallow waters; and
- ♦ Overfishing and over-collection of all valuable nearshore organisms resulting in ecosystem changes and lowered biodiversity.

Overfishing, habitat loss, and international trade in coral reef-generated products have led to the destruction and local extinction of the organisms being collected, and often their habitat. Without improved coastal management, the Philippines risks the loss of significant numbers of marine species and habitats and the integrity of the coastal ecosystem to serve as a life support system.

People must decide that they want dugong and other endangered species to survive, and people must make changes in behavior to allow this to happen!

## **POLICY AND INSTITUTIONAL GAPS AND CONFLICTS**

The Philippines is endowed with many worthwhile laws related to coastal resource management (CRM). If laws that govern coastal and marine areas, their resources, and the environmental impacts of development were effectively enforced, there would be little need for concern.

Unfortunately, the existing laws are not effective in achieving their intended ends without political will, enforcement, and better institutional linkages and coordination to implement them. And, even if institutional responsibilities and support could be improved, the state of the coasts would not improve much without planning and management that considers all the idiosyncrasies of the local coastal areas and their human communities.

Coastal management in the Philippines must be seen as a basic service of local government with support from national government and assisting organizations. The planning and management process needs to begin with LGUs because this is where the primary mandate lies for resource management. Of course, this cannot be accomplished without much support from different sources and without some basic issues being addressed.

Key intergovernmental and intersectoral issues that can be addressed by more integrated coastal management include:

- ♦ Conflicting local policies and laws supporting coastal management between neighboring LGUs;
- ♦ Conflicts between national government programs in infrastructure and local government initiatives in coastal management;
- ♦ Discrepancies in the interpretation of jurisdictions among all agencies concerned with coastal management at national and local levels;
- ♦ Inadequate resources for coastal management by LGUs;
- ♦ Political or land conflicts between neighboring LGUs; and
- ♦ Lack of mechanisms and support for community participation.

Other considerations to improve the institutional and legal inadequacies are:

1. At the national level, the two key agencies, the Department of Environment and Natural Resources (DENR) and the Department of Agriculture through the Bureau of Fisheries and Aquatic Resources (DA-BFAR), have most of the jurisdictional authority over the coastal environment and its resources. The agencies' mandates often overlap, jurisdictions are not always clear, and in a realm where integrated planning is the key to success, the agencies do not always work together effectively and do not manifest an integrated approach to coastal management. The fact that the management of fisheries (under DA-BFAR) is distinct



LYNN FUNKHOUSER

*Fisheries must be carefully managed at the local level to ensure continued benefits from productive seas.*

from the management of habitat (DENR) provides a basic case in point. Fisheries and their habitats cannot be managed as separate entities.

2. Significant gaps in authority and management of resources separate national agencies and local government authorities. In the Philippines, most environmental and fishery laws, including Presidential Decrees, are administered by either the DENR or DA-BFAR. Yet the responsibility to implement the laws for the majority of activities that influence the terrestrial and coastal marine zones out to 15 km offshore is under the LGUs of cities and municipalities. Most LGUs do not have the capacity, expertise or budget to implement the laws under their jurisdiction. The two primary weaknesses in this system are:
  - ♦ The lack of technical assistance by national agencies to the LGUs to assist them in understanding the needs of management and what is intended with the existing laws; and
  - ♦ Inadequate budgetary support to LGUs to help them afford the cost of law enforcement through marine patrols, monitoring environmental impacts, and conducting simple legal procedures to assess and collect fines, imprison offenders, and other related activities.
3. Environmental problems do not respect jurisdictional boundaries. Ocean currents carry sediments, toxic wastes, and pollutants from one area to another. Yet, legal and institutional systems must have boundaries to provide delineation of jurisdiction and areas of responsibility for effective implementation. The political boundaries of greatest importance in managing coastal resources in the Philippines are those of the LGUs. The implication is that variation in the ability or willingness of one LGU to implement management plans may affect neighboring jurisdictions. The inability or unwillingness of LGUs to engage in cooperative, multijurisdictional management is a significant drawback to effective coastal resource development and management. Without a means to manage special areas that include more than one LGU such as bays, gulfs, or straits with particular resources or problems, effective coastal management will be elusive (Arquiza and White 1999).
4. Finally, the default policy of open-access fisheries and resource use regimes is now changing to support better coastal resource management. This is a prerequisite to stopping the “tragedy of the commons” occurring throughout coastal areas. The devolution of jurisdiction to local governments is the first important step in reducing open access of coastal resources. The Fisheries Code of 1998 is a second important step, because the code encourages a variety of mechanisms that limit access and promote sustainable use. The application of resource rents, license and entry fees, zoning, marine sanctuaries, access and use plans, among others, will all be important to improve management.



The issues identified and discussed above represent but a subset of problems facing coastal areas. An integrated coastal management approach is needed to address these issues and solve the complex problems facing coastal areas in a systematic and participatory manner. The promotion of coastal resource management as a basic service of government will help to ensure that coastal management is adopted throughout the country.



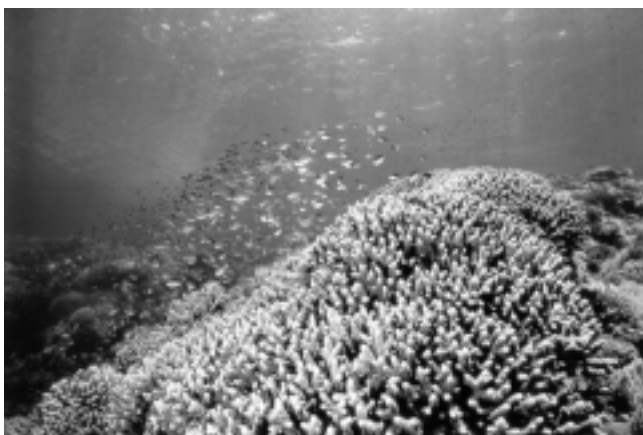
ALAN WHITE

*The growing human population puts tremendous stress on limited coastal resources.*



TONI PARRAS

*A sustainable food supply from municipal waters will only be realized when fishing effort is reduced to sustainable levels, destructive fishing is stopped, and coastal habitats are protected and managed.*



LYNN FUNKHOUSER

*One square kilometer of healthy coral reef can produce about 20 tons of fish per year and also provide the resource base for diving tourism.*

# chapter 3

## ***Overview of coastal management concepts and principles***

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The concept of coastal management is at least 30 years old, but it was given added emphasis and visibility only recently, at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in 1992. The UNCED conference, or Earth Summit, highlighted integrated coastal management as a central organizing concept in ocean and coastal management. The importance of oceans and coasts is specifically addressed in both the conventions adopted in the Rio Conference (the Framework Convention on Climate Change and the Convention on Biological Diversity) and in Agenda 21, an action program emanating from the conference.

Since the Earth Summit, there have also been several significant international conferences and agreements reinforcing the call for coastal management:

- ♦ The Global Conference on Sustainable Development of Small Island Developing States, held in Barbados in 1994, explored the special problems of small-island developing states. A comprehensive “Program of Action for Sustained Development of Small Island Developing States” resulted from the meeting. Three of the nine sustainable issues contained in the Program of Action (climate change and sea level rise, coastal and marine resources, and tourism resources) call for the formulation of new policies and programs in the context of integrated coastal management (Cicin-Sain *et al.* 1995); and
- ♦ The International Coral Reef Initiative, first announced in 1994, is a partnership among several nations, United Nations agencies, and international NGOs. At a meeting held in Dumaguete City, the participants issued a “Call to Action” endorsing integrated coastal management as a “framework for achieving the sustainable use of, and maintaining the health of, coral reefs and associated environments.”

Through the efforts of international organizations and programs and Philippine-based initiatives, the definitions, concepts, and guiding principles in coastal management have evolved for widespread adoption and use.

### **DEFINITIONS AND CONCEPTS**

Accepted definitions of coastal management in Table 3 include those for coastal resource management (CRM), community-based coastal resource management (CBCRM), coastal zone management (CZM), and integrated coastal management (ICM). CRM is the term commonly

used to describe coastal management in the Philippines. ICM is also commonly discussed in parallel with CRM as a means of improving the state of coastal resources. These terms serve as the operating definitions for coastal management replacing terms such as fisheries resource management and fisheries development, which are commonly equated with sectoral interventions to increase production output of the fisheries sector.

ICM emphasizes the integration of management across both environmental and human realms (Table 3) to solve complex problems that span sectoral concerns, ecosystems, institutions, and political boundaries. The threats to coastal areas span from the top of the mountain, where deforestation and subsequent siltation degrade coastal water quality and coral reef growth, to the sea, where overfishing and shoreline development are resulting in the decline of municipal fisheries and habitats (Figure 5).

**Table 3. Definitions of coastal management and approaches.**

**Coastal resource management (CRM)** is a participatory process of planning, implementing, and monitoring sustainable uses of coastal resources through collective action and sound decision-making.

**Integrated coastal management (ICM)** comprises those activities that achieve sustainable use and management of economically and ecologically valuable resources in coastal areas that consider interaction among and within resource systems as well as interaction between humans and their environment (White and Lopez 1991). ICM encompasses "CRM" being a broader set of activities that emphasize integration within government, non-government, and environmental realms.

**Collaborative management or co-management** is based on the participation of all individuals and groups that have a stake in the management of the resource. Important elements include (White *et al.* 1994):

- All stakeholders have a say in the management of a resource on which they depend;
- The sharing of the management responsibility varies according to conditions of authority between local community organizations and government. However, in virtually all cases, a level of government continues to assume responsibility for overall policy and coordination functions; and
- Social, cultural, and economic objectives are an integral part of the management framework. Particular attention is paid to the needs of those who depend on the resource and to equity and participation.

**Community-based coastal resource management (CBCRM)** implies that individuals, groups, and organizations have a major role, responsibility, and share in the resource management and decision-making process. Community-based management is consistent with the tenets of collaborative management since government is always part of the management process.

**Coastal zone management (CZM)** comprises those activities that achieve sustainable use and management of valuable resources and land uses in coastal areas as defined through CRM or ICM but with an emphasis on a specified coastal geographical area or zone.

**Management of natural resources** is the set of rules, labor, finance, and technologies that determines the location, extent, and conditions of human utilization of these resources; management, consequently, determines the rate of resource depletion and renewal (Renard 1991).

**Resource stakeholders** include all those who define and apply some rule, labor, finance, or technology and assume part of the management responsibility. The users of a resource, together with the concerned owners or agencies, are also its managers and stakeholders.

International guidelines on ICM have been developed by the United Nations Environment Programme (1995), Food and Agriculture Organization of the United Nations (1991), World Bank (1993), World Coast Conference Report (1993), International Union for the Conservation of Nature and the Organization for Economic Co-operation and Development (1991) (Pernetta and Elder 1993). The proliferation of ICM guidelines has led to efforts to identify core principles or guidelines for ICM. One such effort is illustrated in Table 4.

**Table 4. Core integrated coastal management guidelines.**

#### **Purpose of ICM**

The aim of ICM is to guide coastal area development in an ecologically sustainable fashion.

#### **Principles**

ICM is guided by the Rio Principles with special emphasis on the principle of intergenerational equity, the precautionary principle, and the polluter pays principle. ICM is holistic and interdisciplinary in nature, especially with regard to science and policy.

#### **Functions**

ICM strengthens and harmonizes sector management in the coastal zone. It preserves and protects the productivity and biological diversity of coastal ecosystems and maintains amenity values. ICM promotes the rational economic development and sustainable utilization of coastal and ocean resources and facilitates conflict resolution in the coastal zone.

#### **Spatial Integration**

An ICM program embraces all of the coastal and upland areas, the uses of which can affect coastal waters and the resources therein, and extends seaward to include that part of the coastal ocean that affects the land of the coastal zone. The ICM program may also include the entire ocean area under national jurisdiction (Exclusive Economic Zone), over which national governments have stewardship responsibilities both under the Law of the Sea Convention and UNCED.

#### **Horizontal and Vertical Integration**

Overcoming the sectoral and intergovernmental fragmentation that exists in today's coastal management efforts is a prime goal of ICM. Institutional mechanisms for effective coordination among various sectors active in the coastal zone and between the various levels of government from national to regional and local operating in the coastal zone are fundamental to the strengthening and rationalization of the coastal management process. From the variety of available options, the coordination and harmonization mechanism must be tailored to fit the unique aspect of each particular government setting and the resource stakeholders of concern.

#### **The Use of Science**

Given the complexities and uncertainties that exist in the coastal zone, ICM must be built on the best science (natural and social) available. Techniques such as risk assessment, economic valuation, vulnerability assessments, resource accounting, benefit-cost analysis, and outcome-based monitoring should all be built into the ICM process as appropriate.

Source: Cicin-Sain *et al.* (1995).

Integration across academic disciplines and sectors is needed to identify issues and research and develop management measures. Spatial and temporal integration is needed to address the interconnectedness of ecosystems and long time scales often required to meet management objectives. An integrative policy framework is essential to address conflicting legal and institutional mandates, plans, and programs. This integration of activities and plans is now seen as a sustaining factor in successful coastal management programs and can best be expressed in an ICM plan or program.

Important aspects of ICM are the need for:

- ♦ Integration across academic disciplines to solve coastal management problems with complexities beyond any one discipline such as fisheries science;
- ♦ Integration across ecosystems that do not stop at the water's edge. All coastal ecosystems interface with each other in some respect;
- ♦ Legal and institutional integration where sometimes as many as 50 government agencies at several levels of government have legal authority over some aspect of coastal space, resources, and human activities; and
- ♦ Integration of policies where conflicting legal and institutional mandates and overlapping laws, plans, and programs are in place.

In the Philippines, and to a lesser extent elsewhere in Asia, changing coastal demographics, increased poverty and unsustainable resource use patterns have led resource managers to put greater emphasis on community-level coastal management with an increasing emphasis on integration of government and community.

“The essential elements of this management process are simultaneous integration and coordination on multiple levels, which can incorporate national and local government working together with community groups in an iterative assessment, planning, and implementation process.... Interdisciplinary teams of researchers and policy experts are involved in the process. Ideally, the community is involved with the research and planning process from the onset, but at least it is consulted with assessment of results and management options” (Christie and White 1997).

Collaborative management or co-management, another way to describe the ICM process, offers:

“...a more dynamic partnership...using the capacities and interests of the local fishers and community, complemented by the ability of the state to provide enabling legislation, enforcement, and other assistance, specifically co-management. Co-management aims to achieve joint responsibility and authority for resource management through cooperation between government and local resource users” (Pomeroy 1995).

Collaborative management is the mode in which ICM or CRM planning generally occurs in the Philippines. The planning and implementation activities should always involve the participation of government, nongovernment, and stakeholder groups.

The CRM planning process follows the same planning logic as ICM. The process of developing an ICM or CRM plan (Figure 13) emphasizes the iterative nature of the planning cycle, in which both government and nongovernment partners participate in planning and implementation. The other key element in the process is the need for a strong foundation of good information upon which to base the ultimate plan and field activities. The information base may begin with existing data but then may be expanded by additional data collection as strategic research needs are identified and fulfilled.

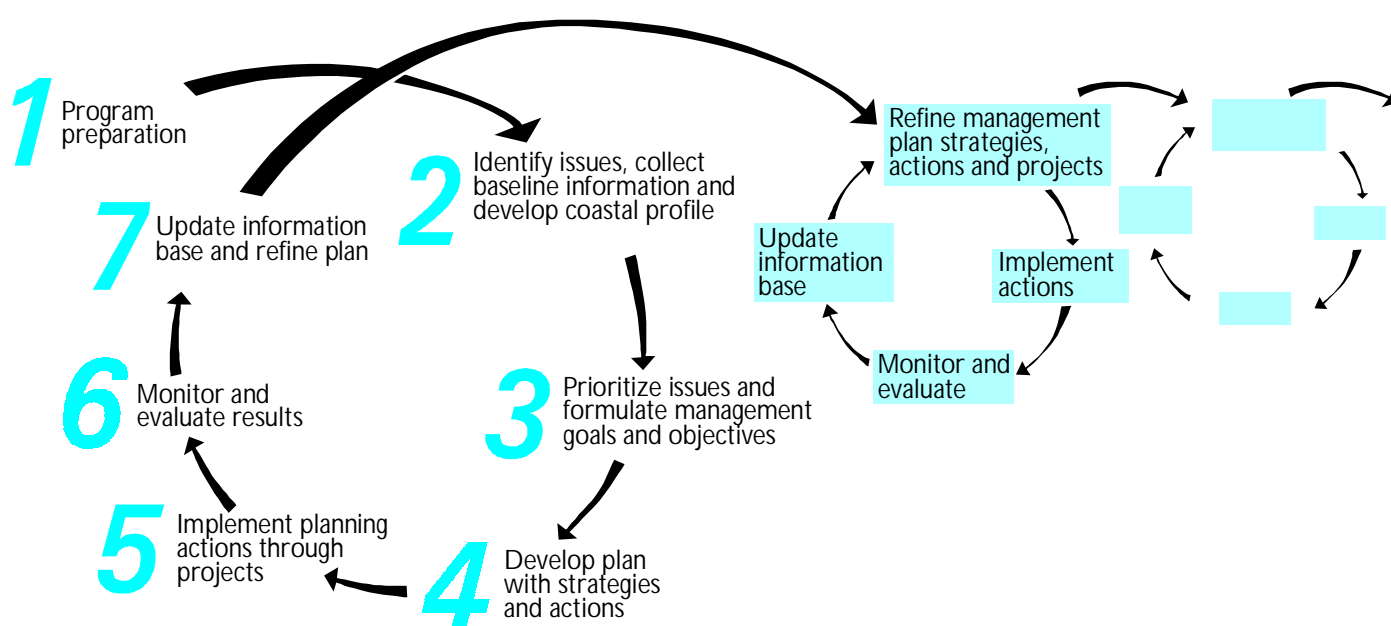


Figure 13. Cyclical ICM data collection, planning, implementation, and monitoring process (White 1997).

The problems facing coastal areas and resources necessitate the use of integrated management approaches (White 1996; Christie and White 1997). Single issue or sector interventions cannot solve complex coastal management issues and their contributing causes (White *et al.* 1997). Integrated coastal management, incorporating the tenets of multisectoral collaboration (co-management) and community participation (CBCRM) discussed above is the only effective approach. This ICM approach is necessarily flexible and adaptable to the situation and set of issues to be addressed. *Guidebook 3: Coastal Resource Management Planning* and *Guidebook 4: Involving Communities in Coastal Management* will provide much more detail and many examples of coastal management as defined above and in Figure 13.

## BUILDING ON EXPERIENCE AND LESSONS LEARNED

Coastal management initiatives in the Philippines have developed in response to a variety of issues and factors over the last 20 years. Several major forces have influenced the development of coastal management in the Philippines in recent years. The first is a variety of community-based projects that have resulted in successful examples showing how communities can manage their coastal resources. These community-based efforts in the 1980s were almost always initiated by NGOs or academic groups usually with some external support. Important examples include island-community marine sanctuaries initiated by Silliman University in the Visayas and the Haribon Foundation in Luzon. The Philippine government through the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) hosted a number of small CRM projects in the 1980s that focused on community involvement in aquaculture and monitoring and management of fisheries.

A second major influence has been a series of donor-assisted projects that have resulted in a number of pilot projects in ICM and built on lessons from the small community-based models developed earlier (Table 5). These donor projects resulted from the interest and openness of Philippine government agencies and NGOs alike. Such projects have ranged in size from narrow to wide geographic boundaries and from low levels of financial support to multi-million dollar assistance over 5 or more years. A thrust in all such programs has been the participation of local communities and governments in a hands-on manner intended to build constituencies for coastal management from the bottom up. Although NGAs have been involved in all large coastal management projects, national policies on ICM are still weak, and no one agency in the country has a significant and clear mandate for coordinating the management of coastal resources. The mandate for coastal management is shared, not well defined, and sometimes under dispute.

*Table 5. Donor-assisted and government projects that have provided the foundation for ICM in the Philippines.*

1. **The Central Visayas Regional Project (CVRP)**, supported by a World Bank loan, was a pilot project in decentralized planning and implementation of community-based rural development operating from 1984 to 1992. One of its components was watershed management, including nearshore fisheries development in four provinces. Interventions included mangrove reforestation, coral reef protection and marine sanctuary establishment, artificial reef and fish-aggregating device installation, and mariculture. A major finding from a 1995 assessment of CVRP was that baseline information was insufficient to fully evaluate the results (Calumpong 1996; SUML 1996). A key lesson learned was that baseline information and periodic monitoring is essential for learning and sustainability.
2. **The Marine Conservation and Development Program (MCDP)** of Silliman University, supported by the United States Agency for International Development (USAID), operated from 1984 through 1986 on three small islands in the Central Visayas. This relatively small project generated important examples for community-based coral reef management that exemplified the potential sustainable use of coral reef fisheries and habitat (MCDP 1986; Russ 1991; Russ and Alcala 1996a, 1996b; Savina and White 1986). The lessons from these three islands attest to the effective role communities can play in sustaining management efforts in spite of changes in government personnel and policies (Vogt 1997).

*(continued)*

Table 5. (continued)

3. **The Lingayen Gulf Coastal Area Management Program (LGCAMP)** operated from 1986 through 1992 as one of six CRM planning areas in Southeast Asia supported by the United States Agency for International Development (USAID) and the Association of Southeast Asian Nations (ASEAN) countries and coordinated in the Philippines by PCAMRD. This was the first attempt at ICM in the Philippines, and addressed one large gulf in northern Luzon composed of 2 provinces and 20 municipalities. The project first generated a comprehensive database for planning, which included reliable fisheries data to measure required fishing effort reduction needs since the most serious issue in the area was overfishing (Chua and Scura 1992). The difficulty of implementing the recommendations on fishing effort forced the planning process to steer toward education, generation of political will, and development of ICM plans at the municipal level. This program initiated an institutional arrangement to coordinate planning and implementation that, while not completely effective, is a model for the country (NEDA 1992). Key results included:
  - ♦ Policy directives to reduce and eliminate commercial fishing within the gulf;
  - ♦ Improved law enforcement and reduced levels of illegal fishing;
  - ♦ A detailed integrated management plan for the municipal waters and coastal resources of Bolinao;
  - ♦ Guidelines for improved aquaculture development;
  - ♦ Mangrove reforestation projects; and
  - ♦ The careful examination of proposed industrial development projects before they are implemented.
4. **The Fisheries Sector Program (FSP)**, conducted from 1991 to 1997, was implemented by the Department of Agriculture (DA) with support from the Asian Development Bank. This large program attempted to generate and implement CRM plans in 12 bays known for their rich fisheries, management problems, and the growing poverty of coastal residents. The program tested the ability of the DA to incorporate community-based management as a mainstream approach to CRM. A primary strategy was to generate bay-wide CRM plans through the involvement of fishing communities by contracting NGOs to facilitate the planning and community organization processes. The results have raised awareness about the need for management, and in a few cases, actually improved fishery management in the bays. A lesson was the importance of establishing a simple set of baseline information on which evaluation and management decisions could be based. The 12 bay-wide projects, together with national policy efforts helped
  - ♦ Establish 22 fish sanctuaries;
  - ♦ Organize more than 1,000 fisheries associations;
  - ♦ Conduct resource assessments to establish sustainable fish levels;
  - ♦ Redirect research and extension work toward CRM;
  - ♦ Enact municipal fishery ordinances in several municipalities;
  - ♦ Rehabilitate mangrove swamps in 6,000 ha of degraded coastal forests; and
  - ♦ Strengthen fishery law enforcement (DENR *et al.* 1997).
5. **The Coastal Environment Program (CEP)** of DENR, started in 1993 and implemented by the regional offices of DENR, emphasizes community participation and focuses on national marine protected areas. The CEP is the only national government program to promote management of the entire coastal environment, including water quality, mangrove protection and reforestation and shoreline land use, and is not solely focused on fisheries management. The CEP has the potential to develop into a national coordinating and policy unit supporting ICM throughout the Philippines if it is supported and can develop effective links with the Bureau of Fisheries and Aquatic Resources.

(continued)



*Table 5. (continued)*

6. **The Coastal Resource Management Project (CRMP)** supported by the USAID through the DENR started in 1996 and ends in 2002. This project was designed to build on the lessons of past projects and to address the current realities about the need to spread improved coastal management around the country in an efficient manner to address the increasing problems and the demand for technical assistance. The CRMP was designed from the outset with the realization that the issues facing Philippine coasts and their human communities are too complex and caused by too many factors to come to viable solutions by intervening only at the local community level. The CRMP strategically orchestrates interventions at both the national and local levels with various government and nongovernment institutions. It catalyzes action at the local community level through collaboration with local government in a manner that empowers the local government and its partners to continue on alone without the assistance of the CRMP. The CRMP promotes coastal management as a basic service of local governments and attempts to provide assistance to stimulate local government initiatives and improve support for community-based management regimes. This series of guidebooks reflects the lessons being learned through the CRMP experience. A few key lessons are (Courtney and White 2000):
  - ♦ Focus both on national and local level work simultaneously;
  - ♦ Use multiple education and communication strategies to build a wide base of support for ICM;
  - ♦ Encourage collaboration and synergy among agencies and donor projects;
  - ♦ Promote expansion by supporting demand from committed local governments and other institutions; and
  - ♦ Support leadership in ICM through training, education, and learning by doing.
7. **The Fisheries Resource Management Project (FRMP)** supported by a large Asian Development Bank loan started operation in 1998 and will continue to 2003 or beyond. It is being implemented through the DA-BFAR and represents the most significant effort by the government to improve coastal management in the country. This program is a continuation of the Fisheries Sector Program that addressed the need for CRM in 12 bays. Eleven of the 12 original bays will be continued and 6 new ones added to the field implementation. The focus of field implementation is empowering communities and local governments to manage their fisheries and other coastal resources. It is designed to build on past lessons of the FSP and other projects. One notable change is that coastal resource assessments will be done together with community participation to start the planning and implementation process. This innovation is patterned after the CRMP upon which the FRMP is depending for some training, education, and other materials already created and available. The FRMP supports CRM as a basic service of local governments and is involved in furthering national policies for coastal management.

A key lesson learned from the various coastal management projects highlighted in Table 5 is that it is impossible to plan and implement ICM programs without a multisectoral approach. Successful programs must have sufficient support from the national and local governments and nongovernment partners and a strong level of acceptance among the resource-dependent communities. A few key lessons and emerging directions in the Philippines are shown in Table 6.

Another major influence affecting the evolution of coastal management in the Philippines is the devolution of authority from central to local governments (provincial, city, and municipality). The challenge created by the decentralization of coastal management responsibility is that few coastal cities and municipalities have the capacity to manage their natural resources. They generally lack trained personnel, budget, and capacity in planning and technical knowledge in coastal management. In spite of these limitations, the motivation among LGUs to manage their resources is increasing rapidly as they recognize the seriousness of the problem and what they

**Table 6. Lessons learned and emerging directions in ICM in the Philippines.**

- ♦ Baseline information is a prerequisite to plan for ICM and to do comparative analyses of “with” and “without” project scenarios.
- ♦ ICM plans that build on good information (environmental profiles) that evolves with the planning process are a prerequisite.
- ♦ Quality technical expertise is a key determinant of success.
- ♦ Participation at all levels is a prerequisite to the effective implementation of ICM plans.
- ♦ The sustainability of ICM interventions cannot be determined without sufficient time for field testing.
- ♦ An integrated planning process is essential to bring together the divergent efforts of various government, nongovernment, and other organizations involved in management.
- ♦ Real and practical results at the field level, such as improved income from fish catch, other resource use, or alternatives such as tourism, are a critical sustaining force at the community level.
- ♦ Even community-based management that appears relatively successful and autonomous requires continuing support and mentoring from government, NGOs, and the private sector.
- ♦ Political will is always required to start and sustain successful ICM programs.

Source: Courtney and White (2000).

stand to lose if no action is taken (White and Cruz-Trinidad 1998). Again, NGOs and academe have and are playing key roles to assist local and national government to take on the task of coastal management. In most of the donor-assisted projects noted above, NGOs performed many of the field facilitation tasks since LGUs are usually not equipped in this role.

Coastal areas and resources in the Philippines were once maintained by the fact that there was a limited demand for the essential resources of space and economically valuable fish and other items (Figure 14). In the 1950s, demand for these resources surpassed supply. The open access regime of the past is now in changing as the jurisdiction of coastal management is devolved to local governments as a basic service. This devolution of authority effectively sets up collaborative management regimes in which government and communities work together to manage resources.

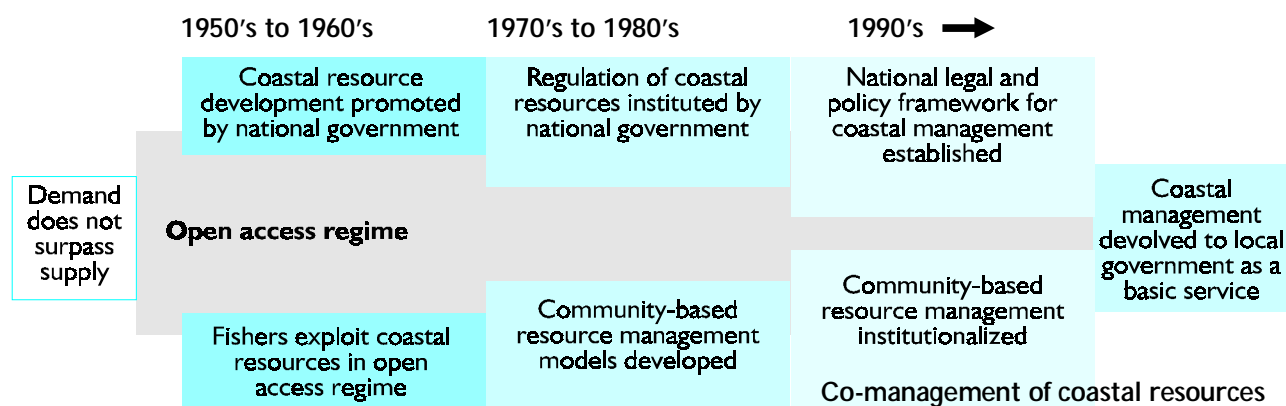


Figure 14. Evolution of coastal management mechanisms in the Philippines.

This transition to co-management of coastal resources, shown in Figure 14, sets the orientation and focus of this *Philippine Coastal Management Guidebook Series*. CRM, delivered as a basic service of local government, empowers local communities to implement management measures, with support and assistance from all other sectors. Even national protected areas, protected under the National Integrated Protected Areas System Act of 1991, are managed as a co-management system through a Protected Area Management Board with local government and stakeholders represented (Arquiza and White 1999).

The lessons learned in past CRM efforts can help guide us in future efforts in the Philippines. Guidebook No. 2 of this series provides the legal and jurisdictional framework and mandate for ICM in the Philippines while Guidebook No. 3 lays out a detailed framework for ICM planning that is being implemented through local government participation together with local communities. The ICM framework in these guidebooks draws heavily on past and current experiences in ICM in the Philippines and elsewhere. A theme that is changing past models and reflected herein is the important role of provincial, municipal, and city governments in leading and sustaining ICM efforts in the Philippines.



ALAN WHITE

*If current trends of overfishing and environmental degradation continue, coastal resources will not be able to provide enough food for the growing population. Coastal resource management is a strategy for food security in the Philippines.*



ALAN WHITE

*Integrated coastal management is required to solve the complex problems that threaten coastal areas.*

# chapter 4

## ***Orientation to the coastal management process***

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The widespread decline of coastal resources in the Philippines is, without a doubt, a fundamental and urgent issue that needs to be addressed through active involvement from all sectors of society. The uncontrolled exploitation of natural resources has served as the primary starting point for the degraded condition of coastal resources experienced today. Fisheries and other coastal resources have been taken from the sea with few limitations and at very little cost, essentially free to the resource user. Exploitation of forest and mineral resources have left upland areas deforested and exposed which has resulted in coastal habitat destruction and fish kills from land-based runoff and other pollutants. Agro-industrial development has intensified, leaving in its wake marine pollution and destruction of critical coastal habitats. All these activities, against a backdrop of rapid population growth and migration to coastal areas and global climate change, have rendered the Philippine coastal environment increasingly degraded, decreasingly productive, and coastal communities among the poorest of the poor.

Regular and appropriate investments in coastal management are required to sustain national and local benefits derived from coastal resources. Fortunately, increasing awareness of the serious degradation of coastal and marine resources worldwide is shifting the focus of government and other programs toward coastal management and away from fisheries development. Furthermore, with the recognition that effective management develops from a participatory process involving coastal stakeholders and day-to-day resource users, many countries, including the Philippines, have devolved the responsibility of managing coastal resources to the lowest level of government. Herein lie the challenges and opportunities to transform these and other new paradigms in coastal management to the successful recovery of Philippine seas. Changes in the overall orientation of coastal management in the Philippines are described in Table 7.

***Table 7. New paradigms for coastal management in the Philippines (Courtney and White 2000).***

- ♦ Shift in emphasis to coastal protection and management from fisheries development, exportation, and optimum production;
- ♦ Devolution of responsibility and mandate for managing municipal waters to local government;
- ♦ Redefining roles of NGAs toward assisting local government with coastal management;
- ♦ Establishing multisectoral and inter-LGU agreements to solve complex problems associated with coastal management;
- ♦ Broadening the base of local and national support to sustain community-based CRM (Christie *et al.* 1994; White *et al.* 1994); and
- ♦ Mainstreaming coastal management on the national agenda.

## PROVEN APPROACHES AND POLICIES FOR COASTAL MANAGEMENT

The Philippines is in the process of defining what policies are basic to successful ICM. These are being tested at the field level all around the country and are being compared to national law and institutional structures in an effort to improve the connections between local implementation and national policy. Several key ingredients in the national policy framework that reflect local realities in the Philippines are:

- ♦ **Participation in management decisions is essential at all levels.** The Philippines has a tradition of democracy that encourages community-level participation and responsibility. This builds on the bottom-up model of encouraging *barangay*-level groups to form management associations and become the effective managers of their coastal resources. This local level of decision making is supported through the Local Government Code and the Fisheries Code, which both give significant jurisdiction to local governments in the resource management process.
- ♦ **National agencies with jurisdiction over coastal resources need to assist LGUs and provide technical support.** The capacity of local governments to manage their coastal environments and resources is limited. They need technical guidance, personnel, budget, and mentoring to achieve ICM practices. This can be facilitated by national agencies such as DA-BFAR, DENR, DILG, and DOT with jurisdiction and concern for coastal environments and resources. The difference now, as compared to the past, is that the direct management responsibility and implementing authority lies primarily with the local governments.
- ♦ **Collaboration and synergy among agencies is essential.** The very term “integrated” strongly suggests that all institutions with a mandate and concern for management of coastal resources must collaborate. This collaboration will include government and non-government organizations and international projects and donors. The planning unit and the boundaries of collaboration will most often be determined by ecological criteria and natural divisions. Bays with defined ocean parameters, resources, and issues do not respect political boundaries. Rather, they must be planned for and managed as a bay unit. This may include several municipalities and one or more provinces in some cases.
- ♦ **Multiple education and communication strategies are required to build a wide base of support for ICM.** People must begin to understand the issues before they will take action to solve them. This can be achieved through education and media campaigns. ICM can be promoted through networks of constituency groups to support initiatives, thus ensuring better sustainability of efforts.
- ♦ **Proven technical interventions must be pursued and applied appropriately.** Much experience has been gained through a variety of coastal management projects that have

tested coastal management interventions. The viable interventions must be pursued, such as integrated planning, habitat protection and management, improved law enforcement, environmentally sensitive livelihood options, community organization and education, and others (Christie and White 1997).

Local government plays a pivotal role as the last safety net for the recovery of coastal and marine resources in the Philippines. For this reason, the *Philippine Coastal Management Guidebook Series* highlights coastal management processes and management measures that are collectively viewed as the delivery of basic services by local governments — municipal, city, and provincial. These basic services cannot be delivered without cooperation between local governments and, at the same time, without the support of NGAs, NGOs, coastal communities, academe, private, and other sectors. The *Philippine Coastal Management Guidebook Series* is for all who care about the survival of Philippine coasts and seas.

## NATIONAL LEGAL AND POLICY FRAMEWORK FOR COASTAL MANAGEMENT

The primary mandate for coastal management has been largely devolved to local government under the Local Government Code of 1991 (Republic Act No. 7160) and more recently defined in the Fisheries Code of 1998 (Republic Act No. 8550). Coastal management may be viewed as one of the inherent functions of LGUs in accordance with their general powers for management within their territorial jurisdictions which include municipal waters out to a distance of 15 km from the coastline (Table 8). The full national policy framework work for coastal management is described in *Guidebook 2: Legal and Jurisdictional Framework for Coastal Management*.

## COASTAL MANAGEMENT AS A BASIC SERVICE OF LOCAL GOVERNMENT

Coastal management as a basic service of local government incorporates all the local government powers and responsibilities including planning, protection, legislation, regulation, revenue

**Table 8. Granting of jurisdiction over municipal waters as defined in the Fisheries Code.**

**Section 16, Article I.** Jurisdiction of Municipal/City Governments. The municipality/city government shall have jurisdiction over municipal waters as defined in this Code (...marine waters included between two lines drawn perpendicular to the general coastline from points where the boundary lines of the municipality touch the sea at low tide and a third line parallel with the general coastline including offshore islands and fifteen kilometers from such coastline). The municipal/city government, in consultation with the Fisheries and Aquatic Resources Management Council (FARMC) shall be responsible for the management, conservation, development, protection, utilization, and disposition of all fish and fishery/aquatic resources within their respective municipal waters.

**Section 76, Article II.** The integrated Fisheries and Aquatic Resources Management Councils shall be created in bays, gulfs, ... [bounded by two or more municipalities/cities to assist in the preparation of plans, fishery ordinances, enforcement of fishery laws, provide advice on fishery matters and perform other functions as required.]

generation, enforcement, intergovernmental relations, relations with people's and non-government organizations, and extension and technical assistance. The process shown in Figure 15 has been detailed from the perspective of local government, in particular, municipalities and cities, which are now tasked by law with the primary responsibility for the nation's coastal resources and municipal waters. This planning process for local government is tailored from a more generic process evolving in many parts of the world for coastal management (see Figure 13).

The steps in the coastal management planning process adapted for local governments shown in Figure 15 are basic and essential prerequisites to successful CRM. These steps can all be facilitated and partially supported by local governments together with their partner communities at the *barangay* level as well as NGAs. A brief description of each phase in the process highlighting LGU basic services and the role of other sectors is shown in Table 9.

The municipal or city government has an important facilitating role in the coastal management process because of their legal mandate to manage resources within municipal waters. National agencies, DENR and BFAR primarily, have key supporting roles in the coastal management process together with LGUs, including provinces. NGOs, both national and local, are often involved in the community-level implementation process through either contracting arrangements under government agencies or through their own projects funded externally.

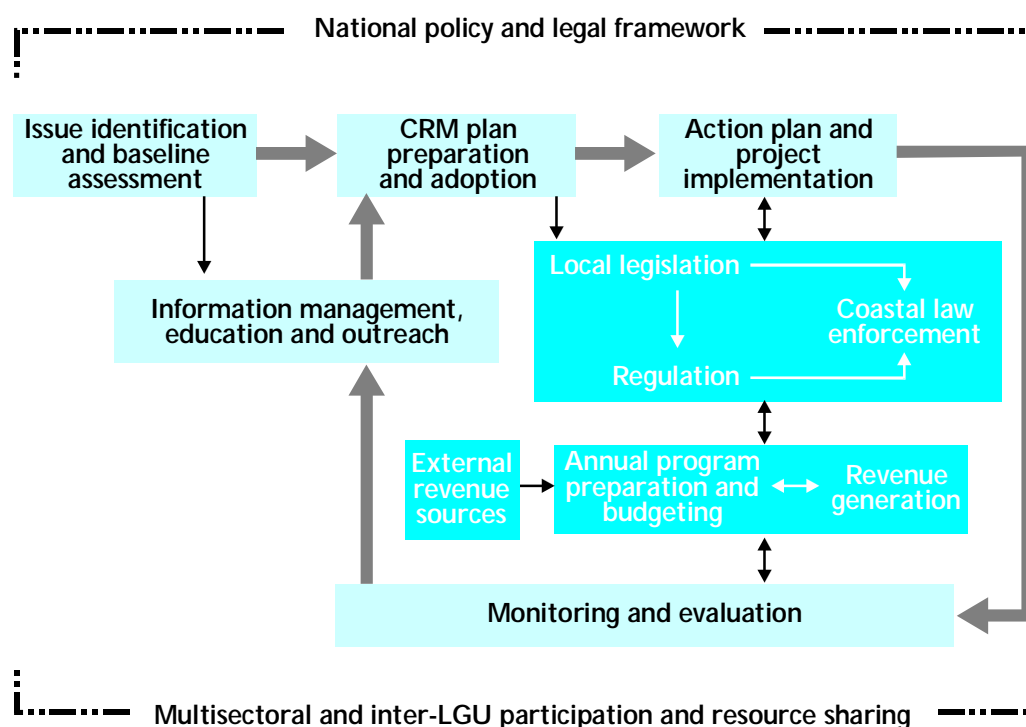


Figure 15. The coastal management planning process being adapted for Philippine local government.

*Table 9. Coastal management phases and steps as a basic LGU service and the roles of various sectors.*

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, non-government organizations, academe, and donors
<b>PHASE 1</b> <b>Issue identification and baseline assessment</b>			
a. Program preparation	<ul style="list-style-type: none"> <li>♦ Allocate budget</li> <li>♦ Determine boundaries and scope</li> <li>♦ Make workplans/budgets</li> <li>♦ Assign personnel</li> <li>♦ Secure consensus on overall approach</li> </ul>	<ul style="list-style-type: none"> <li>♦ Source funding for CRM planning activities</li> <li>♦ Annual investment plan for CRM</li> <li>♦ Enter into memoranda of agreement</li> <li>♦ Participate in discussion</li> <li>♦ Communicate needs and potential roles</li> <li>♦ Agree on design</li> </ul>	<ul style="list-style-type: none"> <li>♦ Prepare work plans</li> <li>♦ Formulate working agreements</li> <li>♦ Contract and train staff</li> <li>♦ Facilitate consensus on design</li> </ul>
b. Secondary information gathering	<ul style="list-style-type: none"> <li>♦ Compile existing maps, reports, data</li> <li>♦ Interview information sources</li> <li>♦ Compile existing laws, plans</li> <li>♦ Review other sources of information</li> </ul>	<ul style="list-style-type: none"> <li>♦ Provide information</li> <li>♦ Assist in compiling information</li> <li>♦ Begin to develop information storage and retrieval system</li> </ul>	<ul style="list-style-type: none"> <li>♦ Locate sources of information</li> <li>♦ Compile information in useful form</li> <li>♦ Coordinate activities</li> </ul>
c. Field assessment/ Participatory Coastal Resource Assessment (PCRA) and other research	<ul style="list-style-type: none"> <li>♦ Train practitioners</li> <li>♦ Conduct PCRA mapping and data collection</li> <li>♦ Contract special research studies on fish stock assessment, habitat condition, water quality, enterprise and others</li> </ul>	<ul style="list-style-type: none"> <li>♦ Conduct PCRA with technical assistance</li> <li>♦ Participate in special research and data collection</li> <li>♦ Assist in data analysis</li> <li>♦ Provide inputs to mapping</li> </ul>	<ul style="list-style-type: none"> <li>♦ Train practitioners</li> <li>♦ Facilitate PCRA</li> <li>♦ Conduct specialized research</li> <li>♦ Analyze research data</li> <li>♦ Make results available</li> </ul>
d. Database and profile development	<ul style="list-style-type: none"> <li>♦ Maps completed</li> <li>♦ Set up data storage and retrieval system</li> <li>♦ Compile coastal environmental profile</li> <li>♦ Use profile as planning base</li> <li>♦ Refine boundaries and further research needs</li> </ul>	<ul style="list-style-type: none"> <li>♦ Provide information</li> <li>♦ Assist with profile analysis</li> <li>♦ Validate data</li> <li>♦ Use profile for planning</li> <li>♦ Decide on boundary demarcation</li> <li>♦ Present profile to legislative bodies</li> </ul>	<ul style="list-style-type: none"> <li>♦ Determine data storage site, personnel</li> <li>♦ Write profile</li> <li>♦ Distribute profile</li> <li>♦ Facilitate discussions on boundaries and research needs</li> </ul>
e. Prioritize issues and analyze causes	<ul style="list-style-type: none"> <li>♦ Conduct community and municipal-based planning sessions</li> <li>♦ Develop issue tree</li> <li>♦ Prioritize issues for management</li> </ul>	<ul style="list-style-type: none"> <li>♦ Participate in process and provide major input</li> <li>♦ Participate in conflict resolution</li> <li>♦ Set priorities in real terms</li> </ul>	<ul style="list-style-type: none"> <li>♦ Facilitate process</li> <li>♦ Interject outside perspectives, research findings, policies, etc.</li> <li>♦ Help translate issues into causes</li> </ul>

*(continued)*



Table 9. (continued)

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, non-government organizations, academe, and donors
<b>PHASE 2</b> <b>CRM plan preparation and adoption</b>			
a. Establish management bodies	<ul style="list-style-type: none"> <li>♦ <i>Barangay</i> and municipal FARMCs established and active</li> <li>♦ Multisectoral Technical Working Group established</li> </ul>	<ul style="list-style-type: none"> <li>♦ Advisory body to LGU</li> <li>♦ Provide basic policies</li> <li>♦ Provide major inputs to plan</li> </ul>	<ul style="list-style-type: none"> <li>♦ Facilitate planning process</li> <li>♦ Conduct planning workshops</li> <li>♦ Provide technical guidance</li> <li>♦ Assist to set up management bodies</li> </ul>
b. Define goals and objectives	<ul style="list-style-type: none"> <li>♦ Conduct CRM planning workshop</li> <li>♦ Identify and evaluate management options</li> <li>♦ Management strategies and actions identified</li> </ul>	<ul style="list-style-type: none"> <li>♦ Build consensus among community</li> <li>♦ LGU support to planning process</li> </ul>	
c. Develop CRM strategies and action plan	<ul style="list-style-type: none"> <li>♦ Proposed water use zones delineated and mapped</li> <li>♦ Multi-year management plan drafted</li> <li>♦ Community consultations on draft management plan conducted</li> <li>♦ Proposed CRM plan presented in multisectoral forum</li> <li>♦ Multi-year CRM plan finalized and adopted</li> </ul>	<ul style="list-style-type: none"> <li>♦ LGU and community participation in planning process</li> <li>♦ Present plan to concerned legislative bodies for adoption and support</li> </ul>	<ul style="list-style-type: none"> <li>♦ Facilitate inter-agency coordination</li> </ul>
<b>PHASE 3</b> <b>Action plan and project implementation</b>			
a. CRM plan implementation	<ul style="list-style-type: none"> <li>♦ Establish and staff municipal CRM office</li> <li>♦ Action plans developed for CRM plan implementation</li> <li>♦ Secure support as required</li> <li>♦ Increase implementation effort</li> <li>♦ Marine sanctuaries established and functional</li> <li>♦ Environment-friendly enterprises established</li> <li>♦ Mangrove areas rehabilitated and managed under CBFMA</li> <li>♦ Registry of municipal fishers established</li> </ul>	<ul style="list-style-type: none"> <li>♦ Take full responsibility</li> <li>♦ Participate in implementation</li> <li>♦ Provide local personnel</li> <li>♦ Organize community groups to assist with implementation</li> <li>♦ Enter stakeholder agreements</li> <li>♦ Source funding</li> </ul>	<ul style="list-style-type: none"> <li>♦ Facilitate initial implementation</li> <li>♦ Provide seed funding</li> <li>♦ Provide technical guidance</li> <li>♦ Conduct training course as required</li> </ul>

(continued)

Table 9. (continued)

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, non-government organizations, academe, and donors
b. Legislation and regulation	<ul style="list-style-type: none"> <li>♦ Ordinances enacted for CRM plan and implementation</li> <li>♦ Permits and licenses issued for municipal water uses consistent with CRM plan</li> </ul>	<ul style="list-style-type: none"> <li>♦ Participate in decision process</li> <li>♦ Endorse and implement</li> </ul>	<ul style="list-style-type: none"> <li>♦ Assist to draft</li> <li>♦ Provide information with examples</li> </ul>
c. Law enforcement	<ul style="list-style-type: none"> <li>♦ Coastal law enforcement units trained and operational</li> <li>♦ Ordinances enforced</li> </ul>	<ul style="list-style-type: none"> <li>♦ Participate and support</li> <li>♦ Deputize and organize fish wardens</li> </ul>	<ul style="list-style-type: none"> <li>♦ Technical training</li> <li>♦ Assist in coordination</li> </ul>
d. Revenue generation	<ul style="list-style-type: none"> <li>♦ Taxes, fines, and fees collected from enterprise development, coastal law enforcement, and municipal water use</li> </ul>	<ul style="list-style-type: none"> <li>♦ Establish regular collection system</li> <li>♦ Use revenue for CRM</li> </ul>	<ul style="list-style-type: none"> <li>♦ Provide examples and technical assistance</li> </ul>
e. Annual program preparation and budgeting	<ul style="list-style-type: none"> <li>♦ Review implementation progress of CRM plan</li> <li>♦ Annual Investment Plan prepared and budget allocated for CRM</li> <li>♦ Staffing requirements identified</li> <li>♦ Operation and maintenance needs identified</li> <li>♦ Capital outlay requirements identified</li> <li>♦ Special projects identified</li> </ul>	<ul style="list-style-type: none"> <li>♦ Conduct public review</li> <li>♦ Develop Annual Investment Plan for CRM</li> <li>♦ Allocate budget</li> <li>♦ Commit staff</li> </ul>	<ul style="list-style-type: none"> <li>♦ Technical assistance as appropriate</li> <li>♦ Policy guidance</li> <li>♦ Source funds</li> </ul>
<b>PHASE 4 Monitoring and evaluation</b>			
a. Monitoring and evaluation	<ul style="list-style-type: none"> <li>♦ Training, technical assistance, and outreach needs identified</li> <li>♦ Train monitoring and evaluation team</li> <li>♦ Monitor environment and ICM process and feedback to database and plan</li> <li>♦ Performance evaluations conducted</li> <li>♦ Management capacity assessments conducted</li> <li>♦ Outcome evaluations conducted</li> <li>♦ Annual monitoring and evaluation report prepared</li> </ul>	<ul style="list-style-type: none"> <li>♦ Collect data</li> <li>♦ Participate in process</li> <li>♦ Take responsibility</li> </ul>	<ul style="list-style-type: none"> <li>♦ Assist to train LGU personnel</li> <li>♦ Assist to analyze data</li> <li>♦ Assist to set up sustainable system</li> </ul>
b. Refine management plan	<ul style="list-style-type: none"> <li>♦ Annual CRM plan review and revision</li> </ul>	<ul style="list-style-type: none"> <li>♦ Use data to refine plan and update database</li> </ul>	<ul style="list-style-type: none"> <li>♦ Provide input on plan refinement</li> </ul>

(continued)

Table 9. (continued)

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, non-government organizations, academe, and donors
<b>PHASE 5</b> <b>Information management, education and outreach</b>			
a. Information management	<ul style="list-style-type: none"> <li>♦ Establish and update municipal coastal database</li> <li>♦ Produce and update municipal water use and coastal habitat maps</li> <li>♦ Annual CRM status reports and maps produced</li> <li>♦ Information management system functioning and institutionalized</li> </ul>	<ul style="list-style-type: none"> <li>♦ Process data into useful information</li> </ul>	<ul style="list-style-type: none"> <li>♦ Design information system</li> <li>♦ Maintain provincial and national coastal databases</li> <li>♦ Provide training</li> </ul>
b. Information, education, and communication	<ul style="list-style-type: none"> <li>♦ Information disseminated for education and planning</li> <li>♦ Technical assistance and outreach program established</li> <li>♦ Conduct education campaigns for municipal CRM programs</li> <li>♦ Hold public hearings for proposed CRM plans and ordinances</li> </ul>	<ul style="list-style-type: none"> <li>♦ Disseminate and use information</li> <li>♦ Feedback to plan</li> <li>♦ Disseminate municipal report on status of coastal resource management</li> </ul>	<ul style="list-style-type: none"> <li>♦ Assist with information and education materials development</li> <li>♦ Prepare and disseminate provincial and national reports on the status of coastal resource management</li> </ul>

Source: Modified from White 1997

Academic institutions of different types have important roles in baseline assessment, information management and analysis for planning, and monitoring and evaluation of coastal management. Overall, the coastal management process is one of collaboration among various sectors and stakeholders. The various roles are elaborated in Table 10.

Table 10. Specific roles of government and nongovernment groups in coastal management.

**Local government units (Municipality and City)**

- ♦ Provide overall facilitation and coordination for planning and implementation
- ♦ Develop a coastal environmental profile with maps for planning
- ♦ Conduct information, education, and communication (IEC) and training activities for local organizations
- ♦ Develop and adopt 5-year CRM plan
- ♦ Support CRM plan implementation through appropriate ordinances
- ♦ Incorporate appropriate CRM best practices in plan
- ♦ Implement CRM plans through annual investment plan and budget
- ♦ Enact comprehensive fisheries management ordinance
- ♦ Maintain a municipal coastal database to facilitate planning and implementation

(continued)

Table 10. (continued)

- Support participatory coastal resource assessments for each *barangay*
- Provide budget and dedicated personnel for planning and implementation
- Identify and implement alternative or supplemental livelihood for coastal communities
- Support coastal law enforcement units as required
- Contract assistance through consultants and NGOs
- Support organization and mandate of municipal and *barangay* FARMCs
- Monitor field activities and selected biophysical and socioeconomic indicators
- Implement revenue generation mechanisms through licenses, fees, and taxes
- Network and collaborate with local and international funding institutions for program/project implementation
- Conduct information, education, and communication campaigns related to sustainable use of coastal resources
- Conduct site-specific research
- Collaborate with province, other municipalities or cities and national agencies to develop multi-municipal ICM plans as required for special management areas

#### Local government units (Provincial)

- Develop and implement policy and planning framework for CRM in province
- Provide technical assistance to municipalities and cities for coastal management planning and implementation
- Monitor and evaluate all coastal management activities and results in province
- Establish and maintain a training staff to train LGUs and other stakeholders in CRM
- Assist to coordinate law enforcement for multi-municipal areas
- Establish, maintain, and update an information management system and database
- Assist each municipality and city to establish and maintain a municipal coastal database
- Provide financial incentives for coastal management based on results of monitoring
- Assist the national government in developing and implementing policy and planning framework for CRM in the country

#### Community stakeholders and people's organizations

- Participate in all CRM planning sessions in all levels of local government (*barangay*/municipality/city/province)
- Provide members to *barangay* and municipal FARMCs
- Participate in stakeholder management organizations
- Volunteer for coastal management implementation activities (i.e. law enforcement, fisheries monitoring and sanctuary establishment and management, etc.)
- Provide local and traditional knowledge and experience in resource management
- Initiate IEC activities in the community
- Source funds for community projects

#### Local government units (*barangay*)

- Data gathering and profiling
- Collaborative planning, implementation, and gathering
- Participation in FARMC, *Bantay Dagat*, and other organizations
- Formulation of resolutions on CRM and enterprise for submission to municipality

#### Department of Environment and Natural Resources

- Formulate in coordination with BFAR, a national strategic framework for CRM
- Assist with management of resources and areas under the mandate of DENR (e.g. mangroves, water quality, foreshore management, quarrying, and protected areas)

(continued)

**Table 10. (continued)**

- Provide material input assistance in specific projects under DENR's mandate
- Provide technical guidance to LGUs in coastal management planning and implementation
- Assist in training of LGUs and community stakeholders
- Identify and implement alternative or supplemental livelihood for coastal communities
- Coordinate with BFAR in the sustainable management of coastal and marine resources
- Monitor and evaluate progress in achieving goals and objectives for coastal and marine resources in the Medium Term Program Development Plan

**Bureau of Fisheries and Aquatic Resources**

- Formulate a national fisheries management plan as a component of a national strategic framework for CRM
- Assist with management of resources and areas under the mandate of BFAR (e.g. fisheries of all kinds, fishing techniques, stock assessment, and aquaculture)
- Provide material input assistance in specific projects under BFAR's mandate
- Provide technical guidance in coastal management planning and implementation
- Assist in training of LGUs and community stakeholders
- Assist in fishery enforcement
- Coordinate with DENR in the sustainable management of coastal and marine resources
- Monitor and evaluate progress in achieving goals and objectives for coastal and marine resources in the Medium Term Program Development Plan

**Department of Interior and Local Government**

- Provide technical guidance and training to LGUs in enhancing the delivery of CRM as a basic service
- Provide operational coastal law enforcement units under the PNP Maritime Group
- Provide financial assistance in specific projects under DILG's mandate
- Monitor and evaluate progress in achieving the goals and objectives for coastal and marine resources in the Medium Term Program Development Plan

**Department of Science and Technology**

- Monitor aquatic and marine research and development projects
- Formulate strategies, policies, plans, programs, and projects for aquatic and marine science technology
- Generate external funds

**Department of Transportation and Communication**

- Formulate policies, plans, and regulations involving maritime transportation (MARINA)
- Develop ports and harbors (PPA)
- Assist in the implementation of laws in the high seas and waters of the Philippines; safeguard marine resources and the environment; prevent, mitigate, and control marine pollution (PCG)

**Philippine Council for Aquatic and Marine Research and Development**

- Coordinate, plan, monitor, and evaluate research development activities dealing with the country's aquatic resources
- Facilitate and program the allocation of government funds earmarked for fisheries and aquatic resources research and development, including coastal management initiatives of academic institutions
- Generate resource-based information for the management of the country's marine resources
- Act as the government lead agency in the implementation of the National Course on Integrated Coastal Management and the training program on ICM for LGUs
- Maintain the National Aquatic Resources Research and Development System and the PhilReefs, the information network on coral reefs and related ecosystems

*(continued)*

Table 10. (continued)

**Nongovernment organizations**

- ♦ Provide assistance at the community and *barangay* level to organize FARMCs and other resource management organizations
- ♦ Provide technical services to LGUs for implementing community level interventions
- ♦ Provide information and education services at the community and municipal level
- ♦ Provide legal services for environmental and fisheries law enforcement
- ♦ Assist in monitoring of biophysical and socioeconomic indicators
- ♦ Provide a conduit for financial assistance to LGUs for coastal management

**Academic institutions**

- ♦ Assist in analyzing information for coastal environmental profiles
- ♦ Assist in designing and implementing a monitoring program for biophysical, socioeconomic, and legal-institutional indicators in CRM for LGUs
- ♦ Assist in integrating existing data and information into ICM plans
- ♦ Assist in formulating CRM plans and packaging of project proposals
- ♦ Assist in designing and maintaining a management information system and database for coastal management
- ♦ Assist in designing coastal management projects for multi-municipal management areas
- ♦ Assist in training LGUs and communities
- ♦ Assist in designing IEC and community development programs and strategies for LGUs, NGOs and POs

**Donors (national and international)**

- ♦ Provide financial assistance to national and local governments for CRM projects
- ♦ Provide financial assistance for building sustainability in CRM through technical assistance in program design, policy planning and implementation, training, education, monitoring and other aspects of coastal management programs
- ♦ Assist in coordinating multisectoral collaboration and policy support for CRM
- ♦ Provide international experience in coastal management policy and implementation

## ESSENTIAL SUPPORT PROCESSES AND STRATEGIES IN COASTAL MANAGEMENT

Best practices in coastal management can be defined in terms of processes that involve direct community participation and management measures. The overall purpose of developing good coastal management plans is to support the implementation of best practices that are effective in protecting and managing coastal resources and are sustainable. The most important support processes and strategies in coastal management are briefly described below.

- ♦ **Local government primary support mechanisms**

- a. Budget allocated for CRM planning and implementation
- b. Staff capability for CRM strengthened through training
- c. Legal support provided for CRM plans through ordinances and resolutions
- d. CRM unit set up with dedicated staff for CRM planning and implementation
- e. Contracts to NGOs, POs, or individuals to support CRM activities signed

- ♦ **Environmental baseline assessment and profiling undertaken**
  - a. Participatory coastal resource assessments and maps completed and used for planning
  - b. Baseline information collected and stored for planning and monitoring
  - c. Information system and database established and functional
- ♦ **Resource management organizations formed and active**
  - a. Fisheries and Aquatic Resources Management Councils (FARMCs) supported and active at *barangay*, municipal, and multi-municipal levels
  - b. Community stakeholder resource management organizations functional in assisting with CRM
- ♦ **Community participation ensured in CRM planning and implementation**
  - a. Community organizing services provided as required
  - b. Information and education provided to community stakeholders
  - c. *Barangay*-level CRM plans developed and implemented
- ♦ **Habitat management implemented**
  - a. Marine reserves and sanctuaries established for nearshore habitats (White 1988a, 1988b, 1989; Hermes 1998; De la Cruz and Militante 1996)
  - b. Community-based Forest Management Agreements functional for mangrove habitat areas
  - c. Zoning schemes developed for habitats and shoreline land
- ♦ **Fisheries management in place**
  - a. Licensing and permitting schemes planned and established
  - b. Seasonal and gear restrictions planned and implemented
  - c. Level of fishing effort known and monitored for management
  - d. Legal and financial incentives used to regulate fisheries
  - e. Sustainable coastal aquaculture practices implemented
- ♦ **Coastal law enforcement available for CRM implementation**
  - a. Municipal law enforcement units organized and functional
  - b. *Barangay bantay dagat* groups and municipal fish wardens organized and effective
  - c. Municipal water patrols operating in multi-municipal areas
  - d. Court convictions obtained for illegal coastal activities
- ♦ **Shoreline development and pollution controls in place**
  - a. Setbacks enforced for shoreline building and development
  - b. Prevention of building any structures below high tide level enforced
  - c. Domestic and industrial waste not dumped into the sea
  - d. Watershed-level management plans in place

- ♦ **Enterprises encouraged that promote CRM**
  - a. Tourism revenues harnessed to support local conservation
  - b. Marine sanctuaries managed as enterprises to benefit local people
  - c. Environment-friendly souvenir cottage industries promoted
  - d. Employment encouraged outside of fisheries

The best practices listed above must be carefully selected for given planning areas to address specific issues. The organization of activities to implement these CRM practices is always shown in a plan. Good coastal management plans are essential and should always have certain contents as shown in Table 11 and described in *Guidebook 3: Coastal Resource Management Planning*.

**Table 11. Coastal resource management plan checklist.**

A coastal resource management plan for any area, *barangay*, municipality, or city or multi-municipal area requires basic contents to make a good plan. The essential parts of a good plan are:

1. **Description of the area** provides background information. This can include geography, demography, important coastal resources and their condition, socioeconomic status of people, institutions and laws, and other relevant information for management. Use graphs and tables.
2. **Maps** of different scales needed. Include a map of the entire area and detailed maps of the coastal area with resource locations and use patterns, existing management interventions, and other data.
3. **Management issues** must be clearly stated along with their contributing causes and factors. Trends in decline of resources can be used to illustrate issues of concern.
4. **Goals and objectives** should be derived from the main issues. The goal is broad while each objective must be achievable and measurable within the 3- to 5-year life of the plan.
5. **Strategies and actions** are the heart of the plan. One strategy and several actions with assigned responsibilities should address each major issue. A strategy is a well-conceived means to solve a problem. The actions implement the strategy. Actions can be budgeted.
6. **Institutional and legal framework** is needed to support plan implementation. This section explains what institution is responsible and how it is supported by the law.
7. **Timeline** for implementation helps organize all responsible parties to implement the plan.
8. **Monitoring and evaluation** must be included as a set of activities to provide feedback on plan implementation and impact on environment.

## **SUSTAINING COASTAL MANAGEMENT THROUGH MULTISECTORAL AND INTER-LGU COLLABORATION**

The capacity of local government to deliver coastal management as a basic service depends to a large extent on local leadership, community participation, inter-LGU cooperation, and on support mechanisms from NGAs, NGOs, academe, and the private sector. Each sector plays a substantive and vital role but all must work together toward the common goal of coastal management.



There are many cases where more than one municipality or city must enter into shared management arrangements where the marine and coastal ecosystem presents a larger management unit than one LGU can handle. Bays bordered by more than one LGU require bay-wide management plans that are common to all concerned LGUs. Fisheries in such instances do not follow jurisdictional boundaries and must be planned and managed with an ecosystem focus.

Coastal areas with a complex mix of management issues to resolve require multisectoral arrangements and plans to address the issues. Areas with industrial or tourism development concerns require plans that are developed with the participation of the appropriate national agencies, private stakeholders, and the concerned LGUs. Such plans must also consider economic criteria in decision-making that value natural coastal resource benefits and revenues (White *et al.* 1997).

All multisectoral and multi-municipal planning areas require the establishment and monitoring of baseline information and databases to measure the effectiveness of management activities. Academic institutions can play an important role in collecting and managing this baseline information. All coastal management implementation activities can only be measured for success if monitored results are checked against baseline information. Because management of information is not always done efficiently by government institutions, nongovernment institutions can assist with this important function.



*Educating and involving communities in coastal resource management is required for sustained environmental protection.*

# chapter 5

## ***Using the Philippine Coastal Management Guidebook Series***

The overall purpose of this series of guidebooks on Philippine coastal management is to encourage the proper use of the planning and management process and to explain what has already been learned from Philippine and international experience. The guidebook series is organized around the flow of management planning. Tables 12 and 13 list the basic phases in the coastal management planning process and the supporting mechanisms described in Chapter 4 and indicate what guidebooks or other materials can be used as reference for this phase, activity, or mechanism. In addition, essential benchmarks in the coastal management cycle are identified briefly.

**Table 12. Coastal management phases, benchmarks, and guidebook references.**

Coastal management phase	Benchmarks	Philippine Coastal Management Guidebook Series and other references
<b>1. Issue identification and baseline assessment</b>	<ul style="list-style-type: none"> <li>• Staff committed and budget allocated for CRM</li> <li>• Existing information and data consolidated and analyzed</li> <li>• Municipal water boundaries delineated and mapped</li> <li>• Participatory coastal resource assessment conducted</li> <li>• Baseline assessments for fisheries and other resources completed as needed</li> <li>• Habitats, land use, water use, conflicts/issues identified and mapped</li> <li>• Municipal water habitat, use, issues, maps completed</li> <li>• Issues, problems, and opportunities identified and prioritized through community consultation</li> <li>• Human impacts in coastal environment identified</li> <li>• Coastal environmental profile completed</li> </ul>	Guidebook 1: Coastal Management Orientation and Overview Guidebook 2: Legal and Jurisdictional Framework for Coastal Management Guidebook 3: Coastal Resource Management Planning Guidebook 4: Involving Communities in Coastal Management PCRA Handbook (Walters <i>et al.</i> 1998) Coastal Resource Values (White and Cruz-Trinidad 1998) Coral Reef Monitoring Handbook (Uychiaoco <i>et al.</i> 2001)
<b>2. CRM plan preparation and adoption</b>	<ul style="list-style-type: none"> <li>• <i>Barangay</i> and municipal FARMCs established and active</li> <li>• CRM planning workshop conducted</li> <li>• Multisectoral Technical Working Group established</li> <li>• Proposed zoning of municipal waters, management strategies and actions, policies, and implementation process developed through community consultation</li> <li>• Multi-year CRM plan drafted</li> <li>• Community consultations on draft management plan conducted</li> <li>• Proposed CRM plan presented in multisectoral forum</li> <li>• Multi-year CRM plan finalized and adopted</li> </ul>	Guidebook 2: Legal and Jurisdictional Framework for Coastal Management Guidebook 3: Coastal Resource Management Planning Guidebook 4: Involving Communities in Coastal Management Coastal Resource Values (White and Cruz-Trinidad 1998) Guidebook 5: Managing Coastal Habitats and Marine Protected Areas

(continued)

Table 12. (continued)

Coastal management phase	Benchmarks	Philippine Coastal Management Guidebook Series and other references
3. Action plan and project implementation	<ul style="list-style-type: none"> <li>• Municipal CRM office established and staffed</li> <li>• Action plans developed for CRM plan implementation</li> <li>• Marine sanctuaries established and functional</li> <li>• Environment-friendly enterprises established</li> <li>• Mangrove areas rehabilitated and managed under CBFMA and other regimes</li> <li>• Local legislation drafted and adopted</li> <li>• Ordinances enacted for CRM plan and implementation</li> <li>• Permits and licenses issued for municipal water uses consistent with CRM plan</li> <li>• Coastal law enforcement units trained and operational</li> <li>• Ordinances enforced</li> <li>• Taxes, fines, and fees collected from enterprise development, coastal law enforcement, and municipal water use</li> <li>• Annual budget allocations</li> <li>• Review of CRM plan implementation progress</li> <li>• Staffing requirements identified</li> <li>• Operation and maintenance needs identified</li> <li>• Capital outlay requirements identified</li> <li>• Special projects identified</li> <li>• Training, technical assistance, and outreach needs identified</li> <li>• Budget requirements programmed</li> </ul>	<p>Guidebook 2: Legal and Jurisdictional Framework for Coastal Management</p> <p>Guidebook 3: Coastal Resource Management Planning</p> <p>Guidebook 4: Involving Communities in Coastal Management</p> <p>Guidebook 5: Managing Coastal Habitats and Marine Protected Areas</p> <p>Guidebook 6: Managing Municipal Fisheries</p> <p>Guidebook 7: Managing Impacts of Development in the Coastal Zone</p> <p>Guidebook 8: Coastal Law Enforcement</p> <p>Coastal Tourism Management Handbook (Huttche <i>et al.</i> 2001)</p> <p>Mangrove Management Handbook (Melana <i>et al.</i> 2000)</p>
4. Monitoring and evaluation	<ul style="list-style-type: none"> <li>• Performance evaluations conducted</li> <li>• Management capacity assessments conducted</li> <li>• Outcome evaluations conducted</li> <li>• Annual CRM plan review and revision</li> </ul>	<p>Guidebook 3: Coastal Resource Management Planning</p> <p>Guidebook 5: Managing Coastal Habitats and Marine Protected Areas</p> <p>Coral Reef Monitoring Handbook (Uychiaoco <i>et al.</i> 2000)</p>
5. Information management, education, and outreach	<ul style="list-style-type: none"> <li>• Municipal coastal database established and updated</li> <li>• Municipal water use and coastal habitat maps produced and updated</li> <li>• Education campaigns for municipal CRM programs developed and conducted regularly</li> <li>• Technical assistance and outreach programs established</li> <li>• Public hearings for proposed CRM plans and ordinances conducted</li> </ul>	<p>Guidebook 3: Coastal Resource Management Planning</p> <p>Guidebook 4: Involving Communities in Coastal Management</p> <p>Municipal Coastal Database (CRMP 2001)</p> <p>Participatory Methods in Community-based Coastal Resource Management (IIRR 1998)</p>

**Table 13. Coastal management supporting mechanisms.**

<b>Multisectoral and inter-LGU participation and resource sharing</b>	<ul style="list-style-type: none"> <li>• National government agency and provincial resources identified, coordinated, and tapped for CRM technical assistance, training, information management, IEC, and resource assessments to municipalities</li> <li>• Academic institutions and NGOs tapped for community organizing, training, technical assistance, research, and advocacy</li> <li>• Inter-LGU agreements established for bay and watershed management, coastal law enforcement, cost sharing, policy harmonization</li> <li>• Provincial database and geographic information management system established and updated</li> <li>• Annual CRM status reports and maps produced and disseminated by province to all municipalities</li> <li>• Provincial CRM Office and Resource Center established</li> <li>• IEC strategies coordinated and campaigns conducted</li> </ul>	Guidebook 1: Coastal Management Orientation and Overview Guidebook 3: Coastal Resource Management Planning Guidebook 4: Involving Communities in Coastal Management
<b>National policy and legal framework</b>	<ul style="list-style-type: none"> <li>• National policies supportive of ICM for effective field level management</li> <li>• National jurisdictions clear in relation to local government</li> <li>• National agency roles supportive and effective for improved CRM</li> </ul>	Guidebook 1: Coastal Management Orientation and Overview Guidebook 2: Legal and Jurisdictional Framework for Coastal Management
<b>External revenue sources</b>	<ul style="list-style-type: none"> <li>• Internal revenue allotments</li> <li>• Various revenue supporting mechanisms in place</li> <li>• Foreign donors tapped</li> </ul>	Guidebook 3: Coastal Resource Management Planning

The outputs of the coastal management process are the best practices in coastal management described in Chapter 4. The various best practices and support processes and strategies in coastal management are further elaborated in other guidebooks of this series as noted in Table 14.

**Table 14. Coastal management best practices and guidebook references.**

<b>Best practices</b>	<b>References</b>
Local government primary support mechanisms	Guidebook 3: Coastal Resource Management Planning
Environmental baseline assessment and profiling undertaken	Guidebook 3: Coastal Resource Management Planning Guidebook 4: Involving Communities in Coastal Management
Resource management organizations formed and active	Guidebook 3: Coastal Resource Management Planning Guidebook 4: Involving Communities in Coastal Management Guidebook 6: Managing Municipal Fisheries
Community participation ensured in CRM planning and implementation	Guidebook 4: Involving Communities in Coastal Management

*(continued)*

Table 14. (continued)

Best practices	References
Habitat management implemented	Guidebook 3: Coastal Resource Management Planning Guidebook 4: Involving Communities in Coastal Management Guidebook 5: Managing Coastal Habitats and Marine Protected Areas Guidebook 7: Managing Impacts of Development in the Coastal Zone Coastal Tourism Management Handbook (Huttche <i>et al.</i> 2001)
Fisheries management in place	Guidebook 6: Managing Municipal Fisheries
Coastal law enforcement available for CRM implementation	Guidebook 8: Coastal Law Enforcement
Shoreline development and pollution controls in place	Guidebook 7: Managing Impacts of Development in the Coastal Zone Coastal Tourism Management Handbook (Huttche <i>et al.</i> 2001)
Enterprises encouraged that promote CRM	Guidebook 3: Coastal Resource Management Planning Sustainable Livelihood Options (IIRR 1997)

This first guidebook summarizes the issues facing coastal management in the Philippines and carefully explains, in summary form, the path towards solutions. The issues are all clustered around human behaviors that collectively are destroying our coastal environments and resources. The solutions involve much improved planning of how we use our coastal resources and how we manage our behavior as a society. A key ingredient in succeeding to protect and manage our coastal areas and the people that reside there is for people to participate in the process and to take responsibility for their actions. The LGU is the logical political unit to encourage this to happen because the Philippine coastline is too long for any one national agency to have effective control. Thus, supporting CRM as a basic service of city, municipal, and provincial governments, and all this entails, is a theme of this guidebook series.

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*Effective coastal management must be integrated, participatory, multi-disciplinary, adaptive, and responsive to local needs.*



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